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COMPUTERWORLD

Oracle users frustrated by wait for DBMS, tools

1993 utilities to trail Oracle 7's October release

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Oracle Corp. users, eager to install the new Oracle 7 relational database management system, have learned that only a select group of sites will get delivery this fall. Worse, those lucky enough to get their hands on Oracle 7 will have to use the 3-year-old, character-based SQL Forms 3.0 tool to build new applications for the next three to six months.

A new tool set that supports graphical user interfaces and non-Oracle databases will not be announced until early next year, Oracle said last week.

Some users were clearly frustrated that the integrated tool set would be delayed from the fall until early next year — slowing development plans for Oracle 7. Until the new tool set arrives, users must write extra code to invoke Oracle 7's new features.

"Users who need these tools today are having to turn to [vendor] sources other than Oracle to get [similar] capabilities," said David Kreines, a project manager at the Educational Testing Service in Princeton, N.J., who chaired the International Oracle User Group conference.

Oracle executives confirmed that Oracle 7, announced June 15, would be delivered to selected customers starting Oct. 1, fol-

Continued on page 10

FCC ruling opens local loop

BY ELLIS BOOKER
and MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Federal regulators took their first historic steps last week toward opening the local-exchange network to the kind of price and service competition that has benefited business customers in the long-distance market.

Collectively, the watershed rulings permit "alternative access" carriers such as Metropolitan Fiber Systems, Inc. and Teleport Communications Group, as well as large end users, to physically collocate their networking gear inside local-exchange telephone company central offices and connect to long-distance dedicated network services.

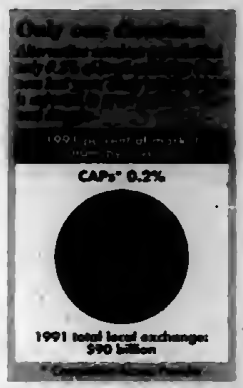
Bypass carriers are currently limited to collocation granted on a state-by-state basis for local service interconnection only.

Strong support

Coalitions of business network managers, such as the International Communications Association and the Ad Hoc Telecommunications Users Committee, strongly supported the move.

Group representatives said they expected competition to produce lower prices, better service and network redundancy so they can reroute traffic around

Continued on page 8



Source: Federal Communications Commission, Association for Local Telecommunications Services

Forget the glitz: Unix Expo attendees seek remedies

BY MARYFRAN JOHNSON
CW STAFF

NEW YORK — The "Show Me" state of Missouri might be a more appropriate staging ground for Unix Expo, which opens here tomorrow to users who are in no mood for futures or fantasies.

"We need to define open systems in terms of the customer, not the technology itself," said Mark Factor, MIS director at Au Bon Pain, Inc. in Boston. "In the end, an open system is whatever gives your company president or end users the information they want."

Factor is one of the information systems executives featured in a conference session on the "payoffs and pitfalls" of moving to open systems. Another is Kevin Reilly, director of operations and technology at Hyatt Hotels Corp. in Chicago.



Steven Lewis

EG&G's Bob Curran: *'I think the interest in Unix is much stronger in the larger shops now'*

"What I can tell other users is that while it's not particularly easy, the move from proprietary to open systems is doable," Reilly said. "It makes your technology and administrative life much, much easier."

With an expected 28,000 attendees and more than 300 exhibitors, this Unix Expo will be the largest ever. The underlying theme focuses on real-world practicality — namely, what does this technology do for my company today?

"People want to see the steak, not the sizzle," said Gary Donnelly, one of the show committee members and director of membership at the National Information Technology Center in Rockville, Md.

"Users are a lot less interested in the latest bells and whistles. They want to see a so-

Continued on page 20

No time for downtime

Large-capacity mainframe systems get fairly high user satisfaction scores in the crucial area of reliability for the second straight year

See Buyers' Scorecard, page 48

Product	Score 1991	1992
HDS EX/GX	9.3	9.7
IBM ES/9000	9.4	9.4
Unisys 2200/A19	8.8	9.3
Amdahl 5990/5995	9.2	9.0
DEC VAX 9000	•	7.4

Maximum possible score: 10
*not included in 1991 survey

Micro giants duel at CAMP conference

Microsoft serves up product futures while IBM offers OS/2 assurances

BY MICHAEL FITZGERALD
CW STAFF

CHICAGO — Executives from Microsoft Corp. and IBM offered glimpses of the future to attendees at last week's Corporate Association of Microcomputer Professionals meeting here, but Microsoft used its top billing to wow the crowd in the face of a defensive IBM.

Steve Ballmer, a Microsoft executive vice president and a featured speaker, treated CAMP to a presentation highlighting beta-test versions of numerous products. The presentation included peeks at Windows New Technology, DOS 6.0, the forthcoming Windows for Workgroups and FoxPro for Windows, as well as Microsoft's own Access relational database and many 32-bit applications, including Excel and Word.

The goal of these products, Ballmer said, is to produce a suite of enhanced applications that can dynamically exchange data.

Meanwhile, John Patrick, IBM's director of Personal Systems software marketing, focused his session on reassuring customers that OS/2 remains part of IBM's long-term strategy. IBM said it will officially adopt Carnegie Mellon University's Mach 3 as the kernel for both OS/2 and AIX.

Patrick said IBM continues to focus on allowing applications to

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INSIDE

Former Frito-Lay IS chief Charles Feld leaves Perot Systems to restart his own consultancy after only two months on the job. Page 6.

Beginning this week, *Computerworld* is publishing a comprehensive index of companies mentioned in each issue's articles. The index includes vendors, users, trade associations, academic institutions and user groups and appears at the back of the issue, just before the Stocks page. Page 107.

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6 Perot Vice President Charles Feld leaves his new employer to resume running his start-up consultancy.

6 The government has ordered airline reservation systems to allow customers to use third-party hardware.

7 And the winner is . . . electronic vote tabulation systems.

10 Sybase has made the mainframe a client in the client/server equation.

12 Dell is bundling OS/2 on its PCs.

12 IBM is set to make a PS/2 announcement but pushes back the debut of the corporate entry-level offering.

14 Products from **Make Systems** aim to give users the most bang for their networking buck.

15 NetView/6000 Version 2.1 is here.

16 DEC reveals its RDBMS strategy.

24 Lotus unveils a developer's kit for its messaging interface.

24 A Sun SPARCstation interface from **Network Peripherals** gives users more FDDI options.

Quotable

"I really like the idea of running to the post office to get the mail."

CHARLES FELD
FORMER FRITO-LAY EXEC

Explaining his decision to leave Perot after just two months. See story page 6.

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The 5th Wave



"WHY A 4GL TOASTER? I DON'T THINK YOU'D ASK THAT QUESTION IF YOU THOUGHT A MINUTE ABOUT HOW TO BALANCE THE MAXIMIZATION OF TOAST DEVELOPMENT PRODUCTIVITY AGAINST TOASTER RESOURCE UTILIZATION IN A MULTIDINER ENVIRONMENT."

EXECUTIVE BRIEFING

■ **The FCC begins to pry apart** the local telephone services monopoly enjoyed by telephone companies. The hope is that competition in the local loop will lead to lower prices and better services for business customers. **Page 1.**

■ **Average mainframe discounts are expected to average** 23% this year, according to Gartner Group, compared with an average 18% discount in past years. Others log the average discount at 30%. But don't let the size of the discount blind you to what you're really getting: Some of the "great deals" include freebies that purchasers never use. **Page 79.**

■ **Unix Expo, with attendance nearing 30,000,** will feature new IBM strategies for the RS/6000 and AIX, lots of new products and practical advice on implementing Unix in the commercial workplace. **Page 1.**

■ **Oracle users learn that an integrated tool set** for Oracle 7 will be pushed back from this fall to 1993. Some are frustrated by the news. **Page 1.** Sybase introduces four connectivity tools to complement its client/server database strategy. **Page 10.**

■ **Banyan will offer its network services** on arch-rival Novell's NetWare as part of a new strategy to compete on network operating systems but cooperate on service products. **Page 4. Make Systems** announces a simulator that takes the guesswork out of re-engineering LAN internetwork installations. **Page 14.**

■ **IBM PC Co. adds strength** at the high end with a beefed up PS/2 premium line, but the industry is more concerned about the upcoming ValuePoint announcement. **Page 12.** Dell tops a user survey in reliability, service and support. **Page 39.**

■ **Carnegie Mellon develops a multilingual speech recognition** and translation system, as years of industry research begin to yield limited applications. **Page 28.**

■ **The job market stinks these days, but don't despair.** We asked recruiters and hiring managers to pinpoint those industries in which prospects are good. Among their picks: health care, financial services and distribution. **Page 85.** Learn how you can increase your chances of employment with tips on improving your resume, your appearance and the things you might say in an interview. **Pages 92 and 93.**

■ **Users of the giant Federal Telecommunications System (FTS)-2000** say it's working well and is reasonably priced, but they are concerned about their ability to upgrade to newer technology. **Page 63.**

■ **Borland faces timing challenges** as it tries to establish itself in the Windows spreadsheet market with Quattro Pro for Windows. **Page 37.**

■ **Is the network printing town big enough** for the both of them? Compaq's new products have the features and the price, but Hewlett-Packard has the overwhelming mind-set. **Page 37.**

■ **DEC shows off** an Alpha-based PC prototype at a European user meeting, saying the first machines will deliver six times the price performance of a 486. **Page 44.**

■ **On site this week:** Fidelity Investments copes with its complex environment by fashioning a new standard for application software development. The $1.3 billion Boston firm has 10 projects under development that use the new methodology, which is expected to speed completion by boosting programmer productivity. **Page 73.** In an economy plagued with plummeting interest rates, Norwest Mortgage turns to wireless workgroups to hurriedly add networked personnel and clean up processing backlogs. **Page 51.** California-based Inno Designs uses graphical workstations to speed time-to-market for its product designs in consumer electronics and other retail areas. **Page 51.**

BUSINE

INTERNA COMPET INTENSI

One by one, world trad falling, leading to the r truly global marketplace.

Aided by the substan throughs in telecommunic computer technology, many are finding it easier than ever enter markets around the wo were previously unreachable.

Even the smallest firms are to compete on a global basis, and are finding that overseas marke greater growth potential than d markets,which may be flat or satu

However, this advent of incr global competition has had a bruta on price margins.

Local firms which had previous protected by tariffs or governm port are now finding themselv pressed to compete with the ne of global competitors, who economies of scale are offerin quality at lower prices.

This new global marketplace created the demand for multi multicurrency financial softwa can consolidate a firm's global picture into one integrated balan or P&L in seconds.

Due to very confusing, com and ever-changing tax structur foreign currency exchange ru vary country-by-country—this new challenge to the new breed c CFOs. ■

PRESSURE HEATS UP ON FINANCIAL FORECASTING

The ability to accurately forecast bo financial trends in the marketplace well as the financial performance of t firm is becoming critically important today's fast-moving, highly competitiv marketplace.

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New spreadsheet technology such as CA-Compete!, which allows the creation of a multi-dimensional cube of data as

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WIN-SIZING RENO CELEBRATES

ll be needed is a way to integrate innovative, new, cost-effective plat- and technology with clients' exist- ystems and investments.

one can afford to walk away from past investment and start over. ouring hundreds of millions of dol- IS systems for several decades, America is starting to demand ty from its MIS departments. Return On Investment) of IS difficult to measure and ssible to project. But still, ngful way to assess it must be found.

ne aspect of it that is easy to nd that is the amount of n existing IS systems.

g back and adding up the ment in systems, training, development, etc., it's easy to how much a corporation will ndoning its current systems.

corporations who have under- s exercise, it can be quite a experience. It also puts in a w light proposals to scrap exist- ms. ■

INVESTMENT PROTECTION #1 PRIORITY

many hardware and software ven- e proponents of "starting over" for n self-serving reasons, it is rarely a -efficient or rational move for clients. stead, prudent clients focus on evolu- nary technological advances, as pposed to revolutionary ones. There's o reason to throw away existing sys- ems when there's always technology that integrate the old with the new.

Apple reaching out to touch corporate customers directly

Begins push to sell to large accounts through mail order, direct channel

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. made another bid to get closer to the corporate customer last week by increasing the number of large accounts to which it will sell directly.

The company also continued its efforts to get its products into the hands of the masses when it announced plans to start selling a limited number of its goods by mail order next month.

Apple will limit its initial catalog sales to peripherals, with the recently introduced PowerBook 145 portable being the only computer available. Although an Apple spokeswoman said the company plans to "expand the hardware offerings" and include more Macintosh personal computers in future catalogs, analysts said Apple may miss the boat on generating large PC mail-order sales.

Vendor catalog sales are expected to grow from $3.8 billion this year to $4.4 billion in 1995, but their percentage of the total PC market is projected to drop from 8.1% today to about 6% during the same period, according to researchers at Merrin Information Services, Inc., a distribution-oriented research firm in Palo Alto, Calif.

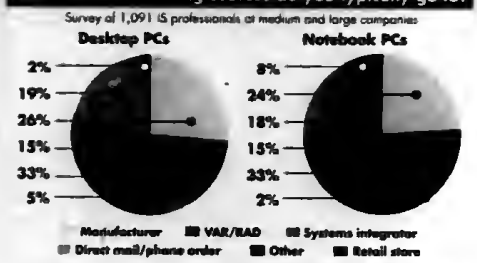
"Given the choice, people would rather go down to a local store and take home a product today than mail away for it," said Marcia Kaplan, Merrin's director of research. "With the recent price-cutting battles, catalog sales lost a lot of the advantages they once had."

Rather, catalog sales might appeal to people in more sparsely populated areas who might not be able to get their hands on the Apple supplies the catalogs offer. "We'll be able to expand our reach," said Maureen Loeb, manager of catalog sales at Apple USA.

To sweeten the deal, Apple will provide a next-day turnaround for most orders and give customers one-year, toll-free telephone support.

Expanding options

Apple is extending its reseller strategy to include the mail-order channel, while increasing its emphasis on direct sales to large corporations



Source: CW Database Division

CW Chart: Michael Siggins

Gaining an edge

The company's move follows a long-term effort to compete more effectively with producers of low-cost PCs. Dell Computer Corp., most notably, has emerged as a strong competitor in the PC market by selling low-cost, high-quality PCs almost exclusively through mail order. Its success has forced IBM, Compaq Computer Corp. and Digital Equipment Corp. into the PC mail-order waters as well.

Apple's first catalog will be mailed out in mid-October to about 1.1 million customers in the general business, consumer and education markets. Revised catalogs will be sent out quarterly. The first catalog will include peripherals such as printers and scanners, complementary third-party products from firms such as Claris Corp. and Aldus Corp. and products that are hard to find in computer stores.

The moves are a byproduct of a highly competitive IBM-compatible clone market that has seen the price of PCs plummet during the past 18 months. Apple Chairman John Sculley has continuously vowed commitment to a cost structure that will allow the company's products to stay competitive and affordable. In the past two years he has changed the company's business strategy from one of selling expensive machines with high profit margins to pushing high volumes of low-cost Macintoshes.

Last week, Apple announced the four-member Performa series, which marked the company's first large-scale attempt to sell through the mass market retail channel now ruled by IBM-compatibles.

No real competition

Nervous dealers said they had assurances from Apple that its direct marketing program would not cut into their business. For instance, all products in the catalog will be listed at their suggested retail price. "Apple has assured us that the prices they offer corporate customers won't compete with what we can offer. So as long as it doesn't affect our allocation of products and helps Apple be a stronger player, we're all for it," said Steve Taylor, a spokesman for Computerland Corp. in Pleasanton, Calif.

Although some dealers may carp about Apple's new plan, direct sales are already a part of life at some large corporations. "Like a lot of companies, we already buy directly from Apple and get massive discounts," said Rob McPhee, a development engineer in the imaging systems department at Du Pont Co. in Wilmington, Del.

PowerBook 100s recalled

Apple announced last week that some owners of its Macintosh PowerBook 100 portable computer should return their units for minor circuit board modification.

The concern emanates from an electrical short that can melt a small hole in the bottom of the machine. So far, the malfunction has occurred in only three of the nearly 60,000 PowerBook 100 units that could be affected by the problem, Apple officials said. No personal injury or property damage has resulted from the problem, and the short did not affect the performance of the machines, they added.

PowerBook 100 computers bearing serial numbers below SQ211xxxxxx and SS216xxxxxx require modification. Units with serial numbers equal to or greater than SQ211xxxxxx and SS216xxxxxx are not affected.

This problem marks the second time an alert has gone up about the PowerBook. Last April, the company confirmed that loose battery packs can short out and create a fire if a piece of metal comes into contact with the negative and positive poles simultaneously [CW, April 27]. The company subsequently offered users a free protective case.

The current short-circuit problem cannot occur in the PowerBook 140, 145 or 170 models because the component configuration is different. Model 100s made since March are also not affected.

Apple is asking PowerBook customers in the U.S. with the specified serial numbers to contact their dedicated PowerBook 100 Safety Helpline at (800) 572-1731 from 9 a.m. to 8 p.m. EDT, Monday through Friday, to schedule modification. Upon confirmation, Apple will provide express pickup of the unit, make the free adjustment and return the unit by express service. Turnaround time will be about three days, Apple said.

JAMES DALY

Banyan introduces network services for NetWare

BY MICHELE DOSTERT
CW STAFF

NEW YORK — Banyan Systems, Inc. in Westboro, Mass., last week made good on earlier promises by announcing a suite of network service products that will run on rival Novell, Inc.'s NetWare network operating system.

Banyan's Vines local-area network operating system has long featured distributed directory, messaging and security services tailored for large, multiserver LANs. These services have helped the company win a devoted following among large LAN users.

However, those customers provide only a 10% to 12% market share for Banyan, according to most analysts. That compares with an estimated 65% to 70% share for Novell.

Banyan has now adopted a new strategy: compete with Novell tooth and nail to sell LAN operating systems but cooperate with Novell to sell network service products on the NetWare platform.

"There are a lot of NetWare users who desperately want these distributed services, but they aren't going to throw away their NetWare to get them," said David Mahoney, chief executive officer at Banyan. "With Enterprise Network Services [ENS], they won't have to," Mahoney added.

Banyan's ENS for NetWare product consists of an ENS server running on an Intel platform, a NetWare Loadable Module for NetWare v3.11 or a Value-Added Process for NetWare 2.2 that runs on the NetWare server, as well as Banyan client software that allows NetWare clients to use ENS.

The first release of ENS for NetWare will include Banyan's StreetTalk directory, Intelligent Messaging, Network Management, System Administration and Security services, as well as a variety of wide-area and server-to-server communications options.

Novell itself has promised users that its forthcoming NetWare 4.0 product will contain a distributed, multiserver directory service similar to Banyan's StreetTalk. However, some analysts said they think that Banyan's ENS products may be enthusiastically embraced by NetWare users who want distributed directory service but do not want the expense and hassle of upgrading to NetWare 4.0.

"By stratifying their product line so much, Novell has really opened the door for Banyan services," said Jamie Lewis, a principal analyst at The Burton Group, a Salt Lake City-based LAN research firm. "Only 25% of Novell's customers are now using NetWare 3.11, and NetWare 4.0 is such a revolutionarily different product that I think it will be 12 to 18 months [following NetWare 4.0's] introduction before we see significant movement to the 4.0 platform.

"If Banyan can do a good job of explaining the benefits of their ENS products to users, I think they could be very successful with it," he added.

Rick Inatome, president of Inacom Corp., a large Omaha-based reseller, said, "I've seen a lot of customers who have tried to downsize but have gotten burnt by the lack of tools, such as directory and security, that they need. I think my customers will be very receptive to ENS."

TWO-PHASE COMMIT SYBASE VS. ORACLE7

PROGRAMMATIC AND PROPRIETARY

```
two-phase()
{
/* open up two servers and a commit service */
  dbproc_server1 = dbopen(login, databasename1);
  dbproc_server2 = dbopen(login, databasename2);
  dbproc_commit = open_commit(login, NULL);
/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/
  commid = start_xact(dbproc_commit, application, "my_xact", 2);
/*
** build transaction name and begin transactions on different
** servers
*/
  build_xact_string("","",commid, xact_string);
  dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s", xact_string);
  dbsqlexec(dbproc_server1);
  dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s", xact_string);
  dbsqlexec(dbproc_server2);
/* perform various updates and then.... */
/* if there is a failure on one abort all of them */
  if (return_code 1 == FAIL)
  {
      abort_xact(dbproc_commit, commid);
      dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server1);
      dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server2);
      if (return_code != FAIL)
      {
          remove_xact(dbproc_commit, commid, 1);
      }
  dbexit();
  exit(ERREXIT);
  }
/* otherwise prepare to commit */
  dbcmd(dbproc_server1, "PREPARE TRANSACTION");
  dbsqlexec(dbproc_server1);
  dbcmd(dbproc_server2, "PREPARE TRANSACTION");
  dbsqlexec(dbproc_server2);
/* as before if anyone fails then abort all, otherwise commit */
  if (commit_xact(dbproc_commit, commid) == FAIL)
  {
      abort_xact(dbproc_commit, commid);
      error_function(); /* rollback and remove each participant */
  }
  dbcmd(dbproc_server1, "COMMIT TRANSACTION");
  dbcmd(dbproc_server2, "COMMIT TRANSACTION");
  my_sqlexec(dbproc_server1);
  my_sqlexec(dbproc_server2);
  close_commit(dbproc_commit);
  dbexit();
}
/* define the subroutine which handles failure */
my_sqlexec(dbproc, dbproc_commit, commid)
DBPROCESS *dbproc;
DBPROCESS *dbproc_commit;
commid;
{
  return_code = dbsqlexec(dbproc);
  if (return_code != FAIL) .
  {
      remove_xact(dbproc_commit, commid, 1);
  }
  return;
}
```

Source: D.O. McGoveran and C.J. Date *"A Guide to SYBASE and SQL Server"* Addison-Wesley, 1992. Pg. 496. Fig. 27.1.

AUTOMATIC AND STANDARD

```
UPDATE  SAVINGS
SET     S_BALANCE = S_BALANCE - 250.00
WHERE   S_DEPOSITOR = 'JONES'
UPDATE  CHECKING
SET     C_BALANCE = C_BALANCE + 250.00
WHERE   C_DEPOSITOR = 'JONES'

COMMIT  WORK;
```

Early Client/Server RDBMS products, like Sybase, don't automatically assure the consistency of distributed transactions. When related data on multiple servers must be updated by one transaction, it is up to the applications programmer to write specialized program code to do it. LOTS OF CODE. Complex, unfamiliar, error-prone system control code that has nothing to do with business applications.

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NEWS SHORTS

Olsen to leave DEC board Oct. 1

When Digital Equipment Corp. CEO-elect Robert Palmer takes over next week, current Chief Executive Officer and founder Ken Olsen will resign as a member of DEC's Board of Directors, effective Oct. 1. Olsen was slated to stay on the board until November 1993. Olsen, who will retain an office at DEC, did not comment on the change in plans.

486SX speeds up

Intel Corp. is scheduled to increase the speed of its I486SX microprocessor today, when it unveils a 33-MHz version of the chip. More than a dozen personal computer vendors, including IBM and AST Research, Inc., have announced systems based on the new chip. Meanwhile, Intel rival Advanced Micro Devices, Inc. last week boosted the speed of its Intel 80386SX clone, introducing 40-MHz versions of its AM386SX and AM386SXL microprocessors. According to AMD, the chip, when used with cache, will rival Intel's 20-MHz 486SX in performance.

Valley GOP leaders back Clinton

Some of Silicon Valley's leading Republican CEOs last week announced support for President Bush's Democratic rival, Bill Clinton. Endorsements came from Apple Computer, Inc.'s John Sculley, Hewlett-Packard Co.'s John Young, National Semiconductor Corp.'s Gil Amelio and Silicon Graphics, Inc.'s Ed McCracken. "Many of us are Republicans," Sculley said. "But as we look at the future of this country, we said we couldn't sit this one out."

Stratus study examines downtime

A new study has found out how much those annoying outages cost corporate America. According to research paid for by Stratus Computer, Inc., "unplanned computer downtime" costs U.S. businesses $4 billion a year. The losses come from lost productivity when employees are idle as well as the loss of potential future business by dissatisfied customers, the study said.

Solbourne sells object unit

ParcPlace Systems, Inc. in Sunnyvale, Calif., a provider of object-oriented developers' software, announced the acquisition last week of Solbourne Computer, Inc.'s Object Interface Software business unit. The Solbourne unit, formed only nine months ago, develops software for building X Window System-based C++ applications. Industry analysts said the acquisition effectively makes ParcPlace the leading developer for object-oriented tools in the C++ environment.

Short takes

Systems Center, Inc. in Reston, Va., has acquired **Tangram Systems Corp.**'s AM:PM package for centrally distributing software to NetWare and OS/2 local-area networks as well as DOS PCs and Apple Macintosh systems.... Pete Privateer, ex-strategic product planner at **KnowledgeWare, Inc.** in Atlanta, has resurfaced as vice president of North American marketing at **Intersolv, Inc.**, a rival computer-aided software engineering company based in Rockville, Md.... **Wang Laboratories, Inc.** will ask a U.S. Bankruptcy Court for permission to terminate 118 real estate leases in various U.S. locations, which is expected to save $35 million.... **IBM Personal Computer Co.** has named David Saxby, formerly senior vice president at Parallan Computer, Inc., the new IBM spin-off's director of server business.... **Apple** moved to beef up the font selection of the mainstream user with the introduction of the Apple Font Pack, a selection of 25 new fonts for $99.... **Andersen Consulting** has signed a five-year extension to an outsourcing contract with Schuller International, Inc., a Denver-based subsidiary of Manville Corp.... **Tandy Corp.** opened a major electronic "Incredible Universe" superstore in a Portland, Ore., suburb last week.

More news shorts on page 16

Feld resigns from Perot post

BY MARK HALPER
CW STAFF

DALLAS — After just two months, former Frito-Lay, Inc. information systems chief Charles Feld has left Perot Systems Corp. to resume running his start-up consultancy.

Feld, who joined Perot July 10, resigned early this month, he said, because he missed the challenge of his own company. "I really like the idea of running to the post office to get the mail," said Feld, who founded the Feld Group earlier this year after leaving Dallas-based Frito-Lay as vice president of management information.

Perot had hired Feld as vice president of a business group charged with helping clients implement information technology strategically [CW, July 27]. Feld is widely credited with having overhauled information systems at Frito-Lay and was to have overseen similar projects for Perot clients.

Entrepreneurial bent

But Feld last week said he wanted to remain in a smaller, entrepreneurial environment that specializes in consulting rather than getting involved in running client operations, as Perot often does.

Feld described his parting as amicable and said he had ample latitude while at Perot. "I really had a pretty broad slate to operate within that environment," he said. "It just came down to working at a major corporation on a major growth path with 1,600 people as opposed to a smaller business consisting of a couple of dozen people."



Feld missed *challenge of start-up*

Feld is restarting the Feld Group and is bringing two Perot employees with him: Monte Jones, who joined Feld at Perot after leaving Chicago systems integrator Technology Solutions Corp. and who was formerly chief information officer at Kentucky Fried Chicken; and Pat Steele, a former Frito-Lay techical director who had joined the Feld Group before Perot absorbed it. Feld, Jones and Steele are all equity partners in the consultancy, which Feld hopes to expand to include about 30 employees.

Feld declined to elaborate on the financial details of his parting except to say that he is giving up the equity share in Perot that he received when he joined the company. "It was kind of a hazy deal" with Perot, Feld said, referring to the manner in which Perot bought out the Feld Group.

He said he had not begun any major client projects at Perot, which allowed him to walk away.

Neither Perot Chairman Mort Meyerson nor President Pat Horner returned calls last week to comment on Feld's departure. It is not known whether the firm will replace him.

Meanwhile, Feld said that as an IS consultant he will preach the virtues of client/server computing, though he sees a place for mainframes for a long time to come. "The mainframe will be the tallest, most robust server on the network," he said, noting that it should typically be used for accounting systems, large databases and network control, while smaller servers should be used for functions including order entry and inventory.

DOT sends CRS message to airlines: 'Loosen up'

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The federal government last week ordered the nation's airline reservation systems to loosen up and let users install third-party desktop systems to tap into multiple reservation and data networks.

The U.S. Department of Transportation (DOT) included the order for open systems in a new batch of regulations intended to curb some monopolistic practices of the airline-owned computerized reservation systems (CRS).

The DOT also decided against mandatory "dehosting," which would mean running the CRS service on a separate mainframe from the one used for the airline's internal CRS.

In the past, CRS vendors provided terminals or personal computers to travel agencies under contracts that forbade them to use third-party hardware or software. The new rules allow agencies to buy desktop computers on their own and access multiple CRSs.

The agency noted that this would make the CRS business more like an information service such as CompuServe or Prodigy. "CRS vendors should be able to conduct business without compelling subscribers to acquire their equipment and software," the DOT argued.

But if the user sticks with hardware supplied by the CRS vendor, that vendor has the right to keep the travel agency captive to its own CRS, the DOT added.

A recent survey by *Travel Weekly*, a trade newspaper based in Secaucus, N.J., found that 18% of travel agency locations are interested in buying their own hardware for CRS access and 25% are interested in buying third-party software.

Compatibility assurance

CRS vendors are required to publish technical specifications so that third-party hardware and software vendors can be sure their products are compatible with the reservation systems.

The long-delayed DOT rules also extend the 1984 ban on displaya biased toward the host carrier and prohibit the use of certain contract clauses that have made it very difficult for travel agencies to switch CRS vendors.

Officials at the two biggest reservation systems, Sabre and Apollo, said the new regulations were overkill.

"It's rather unfortunate that DOT felt forced by political pressure to adopt these rules because they are generally unnecessary," said a spokesman for American Airlines' Sabre unit in Fort Worth, Texas. The political pressure came last month from a U.S. House of Representatives vote for tougher CRS rules [CW, Aug. 17].

Allan Z. Loren, president of the Covia Partnership in Rosemont, Ill., which owns the Apollo CRS, said the DOT's rules are unnecessary but "appear more reasoned than other proposals we have seen regarding our industry, including legislation in Congress."

The DOT did strengthen its requirement that CRS vendors eliminate system defaults that favor the host carrier and load data for other participating airlines in a timely fashion. But the DOT shied away from any stronger steps to eliminate the "architectural bias" that favors the airline operating the system.

"These rules will enhance the ability of carriers to compete on price and service without denying vendors the legitimate benefits of their investments and without requiring detailed management of CRS operations by the government," Secretary of Transportation Andrew H. Card Jr. said in a statement.

Electronic vote tabulation saves cash

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — When U.S. congressmen Chester Atkins (D-Mass.) and Stephen Solarz (D-N.Y.) lost their respective state primaries last week, it pushed the number of incumbent congressional ousters to 19 for the year, setting a post-World War II record. Based on early returns, the same trend appears to favor the replacement of incumbent, manual voting systems.

Early users of automated electronic voting systems are reaping big benefits. For example, the state of Oklahoma is saving $1 million in manpower that used to be spent counting paper ballots. In addition, automated voting systems can process information within minutes.

Last week, New York City and the states of Minnesota and Oklahoma successfully used automated systems to help process voter registration and tabulate votes for elections in their regions. The New York City Board of Elections last week made Staten Island (Richmond County) the third city borough to use a signature-verification imaging technology to automatically locate each voter's name in a computerized system.

Daniel DeFrancesco, executive director of the Board of Elections, said the system has dramatically shortened the long waiting lines voters have come to expect in the city.

SCRIBE, or Signature Capture, Reproduction and Imaging System for the Board of Elections, had already been used by the city in the Bronx and Brooklyn in March. Voters in Queens and Manhattan will register using the system beginning next year.

Developed by Andersen Consulting, the system uses Hewlett-Packard Co.'s Advanced Image Management software residing on an HP 9000 Model 825 server running HP/UX in a client/server configuration.

DeFrancesco said the city will probably add bar-code scanning to the system, which, based on preliminary research, could save the city a minimum of 25% in man-hours.

Based partly on SCRIBE's success, DeFrancesco is looking for additional high-tech voting opportunities. The city expects to install electronic tally systems and begin testing them by 1993. Full deployment is expected by 1994.

Success in Minnesota

Minnesota has been phasing in a vote tabulation system during the past two years. In last week's local and state primaries, an IBM Systems Network Architecture network was used to link the state's 87 counties using IBM 3270 terminals to a Unisys Corp. 2200 6011 mainframe to record the results from the state's 2.65 million registered voters. According to Tim Hanson, director of the information services division of the secretary of state's office, the system will be used in November to calculate Minnesota's presidential election results.

Last week, the state inaugurated a new election-night reporting system, written in Unisys' Mapper fourth-generation language. Hanson said the system replaces an older one that was less user-friendly and couldn't handle as much data as the Mapper system.

As each county manually enters voting results on IBM 3270 terminals, the data is uploaded by a front-end processor via modems to the mainframe, which crunches out the results.



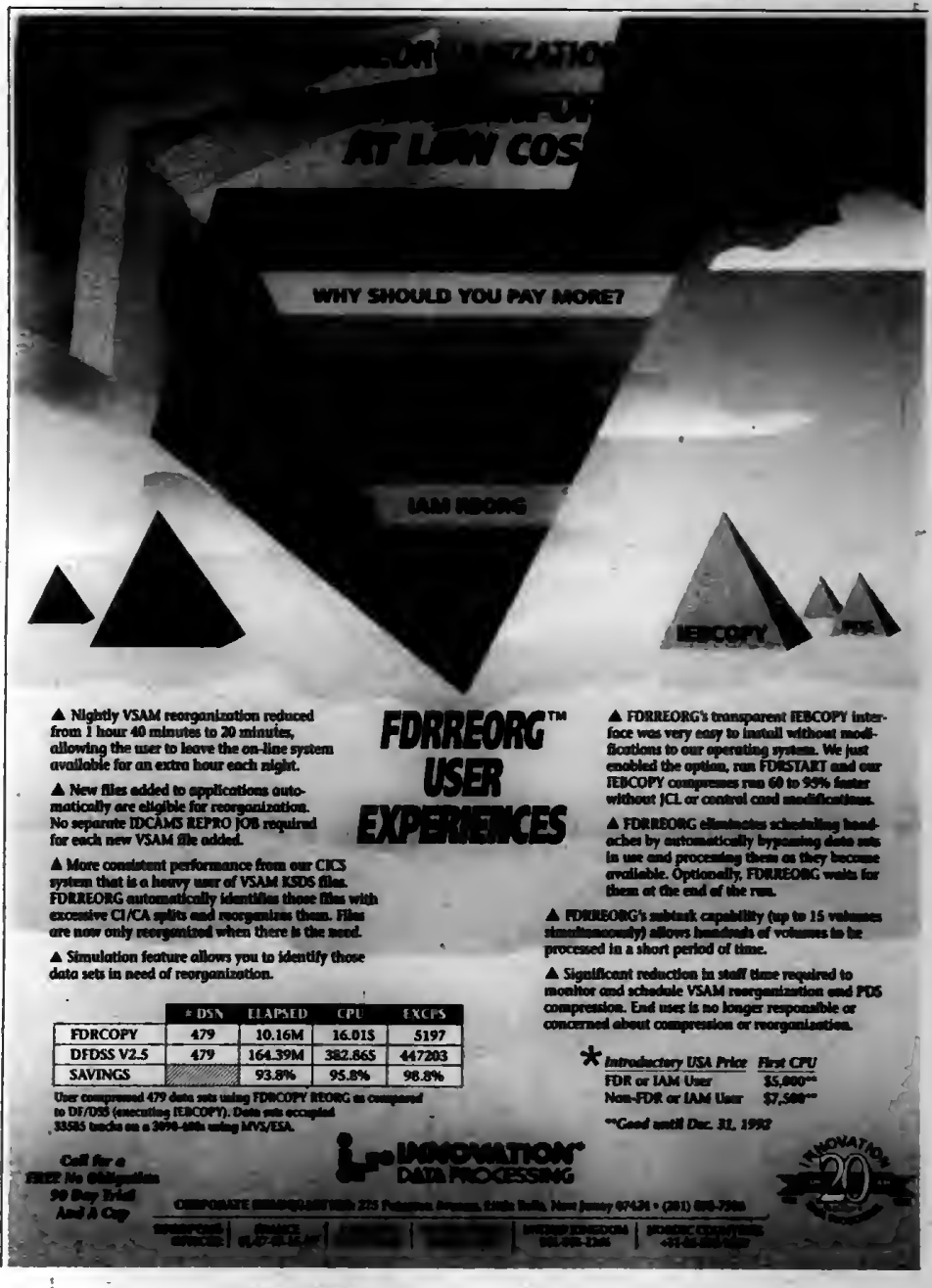
Heavy thunderstorms throughout Minnesota last Tuesday briefly delayed communications between a handful of rural county auditors' offices and the central data center until downed phone lines could be repaired. Though Hanson said he was delighted with the system's performance last week, he expressed concern that the state has no backup systems, such as uninterruptible power supplies, to prevent possible disasters on election night. Hanson said he hopes the state will allocate backup systems in its next budget.

The state of Oklahoma is using computerized systems for both voter registration and automated voting. The system replaced the use of paper ballots with devices that record and report votes electronically, saving $1 million.

According to Lance Ward, secretary of Oklahoma's State Election Board, each of Oklahoma's 77 counties uses Digital Equipment Corp. MicroVAX 3100 minicomputers to record the results from the state's 2 million registered voters.

The information is housed in databases custom-designed by Andersen Consulting and then routed over phone lines to a DEC VAX 4300 machine.

Ward said the system has paid off handsomely. After the polls closed Tuesday at 7 pm Central Standard Time, Oklahoma's voting board had results from 96% of the state's 250 precincts within two hours. Prior to using the system, Ward said it usually took two or three days to gather statewide results.



FCC ruling opens up local loop competition

CONTINUED FROM PAGE 1

faults in the public network.

"For customers, it means they get more competition, faster," said Henry D. Levine, a Washington, D.C.-based attorney who represents several large-business customers.

For their part, users said they were looking forward to the effect on prices and service levels in a competitive local loop, if not alternative kinds of voice and data networking services as well.

"I'm not sure that new services will be as significant as the ramifications on pricing and service that competition will bring," said Alan Phillips, president of Instant Information, Inc. in Boston, the country's largest fax-on-demand service bureau.

However, Levin suggested that a fight over interconnection rates is expected. Phone companies have 120 days to file their tariffs with the Federal Communications Commission.

Once pricing issues are ironed out, however, a quick expansion is expected in the number of businesses using alternative metropolitan-area networks. "The networks of all the [alternative carriers] combined maybe reach into 3,000 or 4,000 buildings nationwide," Levin said. "With this, they'll be able to reach 200,000 businesses within 12 months."

MFS, for example, operates fiber-optic backbone networks in 14 cities, and predicts revenue of $125 million, or about 55% of the competitive access market, according to MFS President Royce J. Holland (see chart page 1).

"The competitive access industry is in a similar position to that of long distance 15 years ago," Holland said.

Last week's FCC ruling quadruples the market that alternative local-access companies can address, according to Richard Tomlinson, president of Connecticut Research in Glastonbury, Conn.

"Up to now, they've been able to address around $500 million of the $4 billion to $5 billion pie for special access lines," Tomlinson said. "With this ruling, they can address half that market."

Tomlinson added that these carriers will be able to address about $4 billion worth of the $20 billion switched local-access market when the next FCC ruling opens local switched services to competition.

The opening of the local loop to competition would not necessarily end the need for private facilities. "We look at internal networking as competitive product," said Jeff Marshall, senior managing director of communications at Bear, Stearns & Co. in New York.

On the other hand, Marshall and other users said they look forward to competitive offerings for services such as Integrated Services Digital Network and switched video, which have been the sole province of local telephone companies.

> "FOR CUSTOMERS, it means they get more competition, faster."
>
> HENRY D. LEVINE
> ATTORNEY

MFS played a key role in last week's FCC ruling, which was a response to MFS' November 1989 Local Equal Access Initiative. That initiative asked the FCC and the U.S. Department of Justice to require Bell operating companies to interconnect with competitive access providers. A number of observers said the FCC interconnection plan, proposed in May, has already had a beneficial effect.

Instant Information uses MFS as a bridge to its long-distance carriers. But Phillips said MFS' ability, under last week's FCC decision, to bridge to local sites "is something we're very interested in."

Phone companies, seeing the writing on the wall, have been lowering prices for private lines and improving service responsiveness. In fact, the FCC — seemingly aware of this tactic and eager to encourage a new breed of alternative carriers into vigorous competition with local telephone monopolies — moved to keep users' choices open.

Cheryl A. Tritt, chief of the FCC's Common Carrier Bureau, said users will be able to break existing contracts with telephone companies and take a "fresh look" at competitive offerings without paying a penalty. Presumably, she said, the telephone companies will negotiate to keep those customers.

The FCC order last week dealt only with special access lines. But in a second step toward busting the local monopoly, the FCC proposed a regulation that would extend the interconnection plan to switched local transport, which affects virtually all business customers. That proceeding will take about 12 months to finish.

To ensure that the traditional telephone companies can respond to the new competitive threat, the FCC said it will give them new pricing flexibility within a price-cap system.

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Sybase: Server becomes client

But mainframe's 'transparent access' will cost users programming time

BY JEAN S. BOZMAN
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. last week turned the client/server equation on its head, saying it has found a way to make the mainframe into a client to a Unix server and minicomputer, instead of the other way around. But it will cost users extra coding time.

Sybase's Open Client for CICS tool kit allows users of IBM mainframe applications to grab data from remote database servers on personal computer local-area networks or Unix networks. But this transparent access will come at the expense of extra programming, some analysts said.

"Sybase is providing the glue that will make client/server computing transparent and easy for the end user," said Neal Hill, a senior technology analyst at Forrester Research, Inc. in Cambridge, Mass. "But the price is that you're going to have to write code on top of the Sybase interfaces."

Some analysts said they believe Sybase innovated Open Client by translating the downsizing trend into a host-to-LAN connectivity tool. "They're probably the first ones to do a reverse-connect product so that a CICS application can get data from a Unix database," said Donald Feinberg, a software analyst at Gartner Group, Inc. in Stamford, Conn. The technique will become more important as downsizing becomes more widespread, he said.

At the same time, Sybase announced an enhanced Open Gateway product for IBM's DB2 relational database. Matesys Corp. in Larkspur, Calif., a developer of Microsoft Corp. Windows applications, said it plans to use the new gateway to develop "client" programs for DB2 that are identical to those for Sybase's SQL Server database.

Sybase also announced NetGateway for OS/2 and Open Server for OS/2. Open Client is priced from $32,040 to $64,040; Open Gateway is priced from $102,530 to $204,930. They are scheduled to ship in the fourth quarter.

More RAID subsystems for AS/400

WALTHAM, Mass. — Two weeks after IBM announced a RAID storage subsystem for the Application System/400 line, third-party firm IPL Systems, Inc. counterpunched with similar products.

IPL's 7936 Models 40 and 42 are based on low-level redundant arrays of inexpensive disks (RAID) technology and are targeted at users doing disk mirroring to build fault-tolerant-like data storage.

An early user of the products, the New England Memorial Hospital, cut six hours off monthly batch-processing time, from 18 to 12 hours, because of the quick seek time of the arrays, according to Phil Janus, assistant vice president of information services. Critical monthly reports are available a day earlier as a result, he said.

The hospital replaced 15.2G bytes of IBM-supplied storage with IPL's Model 40 disks "with no sacrifice of reliability, service or quality," he added.

Priced at $46,600, Model 40 offers up to 54G bytes of storage, while Model 42 holds up to 27G bytes and is priced at $34,200.

IPL, which specializes in storage products for IBM midrange and RISC System/6000 systems, promised more advanced RAID subsystems.

KIM S. NASH

Oracle users frustrated by wait for DBMS, tools

CONTINUED FROM PAGE 1

lowed by volume shipments sometime in early 1993. Oracle Chief Executive Officer Lawrence Ellison compared the phased rollout to one of IBM's early release programs under which new technology goes to experienced customers first.

Oracle has been cautious not to repeat the flawed rollout of Oracle Version 6.0 in 1989, which was caused by buggy software and poor quality control. Fourteen sites started using Oracle 7 in August 1991, followed by hundreds of sites that joined an expanded beta-test program this year.

"It's important to us to turn over Oracle 7 [to customers] in October," Ellison said, "but there aren't a lot of customers who want to flip it on [during] the first month it's available."

Migration from Oracle Version 6.0 to Oracle 7 will take some time because users must first develop applications that take advantage of Oracle 7's distributed database features, such as stored procedures, triggers and two-phase commit. This process could take six months to a year to complete, users said.

The next set of Oracle tools includes the SQL Forms 4.0 application development kit, the SQL ReportWriter 2.0 report generator, the Oracle Graphics 2.0 multimedia package and the BookViewer 1.0 documentation product. All were shown to industry analysts in January and again last week, but they were never formally announced. Oracle demonstrated the new tools on the exhibit floor.

Users said Oracle developers told them that SQL Forms 4.0 is taking longer to complete than expected but that selected users began beta tests of SQL ReportWriter 2.0 last month.

Oracle told users in March that they could begin to develop with SQL Forms 3.0, which is compatible with Oracle 7. Since then, Oracle has held training classes on how to use SQL Forms 3.0 to program for Oracle 7, including sessions at the user conference.

Many sites began developing for Oracle 7 features in June, when a developer's copy of Oracle 7 was widely distributed. But development with SQL Forms 4.0 is expected to be faster.

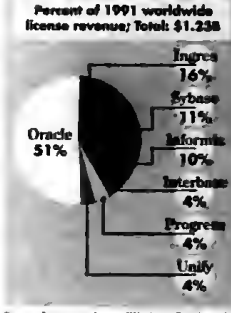
"With the new tools, many of the forms are already set up, and you don't have to write all the triggers," said Dali Gotay, a database administrator at the U.S. Army Corps of Engineers. "It makes a big difference to the users."

Users noted that the modules in Oracle's new tool set are linked, so code can be transferred from one tool to another. The new tools support GUIs and multimedia through a common Oracle Graphics 2.0 software layer. When the new tools are shipped, Oracle users will for the first time be able to write portable applications for other relational databases, such as IBM's DB2. Until now, Oracle tools have worked only with the Oracle database.

Another product set key to Oracle 7 distributed applications also waits in the wings: Oracle's connectivity tools. SQL Net 2.0, announced one year ago, will be shipped on the same program tapes as Oracle 7, said Kenneth Jacobs, vice president of RDBMS marketing. A new group of SQL Connect programs, which link Oracle databases to other databases such as IBM's DB2, will be announced in early 1993, sources said.

Riding high

Oracle remains the leader of the RDBMS pack



Source: Dataquest, Inc. CW Chart: Tom Monahan

Space exec lands at Oracle

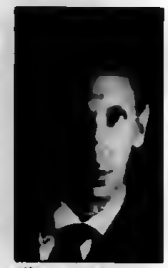
After nearly two years of wearing all three top management hats at the company he founded in 1977, Lawrence J. Ellison tossed one of them to an experienced outsider. Hughes Aircraft Co. executive James Abrahamson, a former NASA administrator and director of the U.S. "Star Wars" Strategic Defense Initiative, has been named chairman of Oracle Corp.'s board.

Abrahamson, 59, will become a full-time chairman next month at $1.18 billion Oracle. He will help direct day-to-day operations from a newly created Office of the Chairman, which he will share with Ellison, according to the company.

Ellison, 48, will retain the titles of president and chief executive officer and will focus more closely on technology issues.

Oracle also formed a five-person executive committee, including Ellison and Abrahamson, to define strategic direction and oversee worldwide operations. "The operational executives will report to me," Ellison said. "In the case of disputes, I'll cast the deciding vote."

Ellison took on the role of chairman in early 1991, following Oracle's 1990 fiscal crisis but before Oracle announced its first-ever yearly loss in 1991. Since then, "I've been spending a good deal of my time making sure such an event never happens again," he told reporters and analysts last week. "The biggest mistake I made was not strengthening the management team." Since June, Oracle has hired several top executives from outside the company.



Ellison will *focus on technology issues*

Abrahamson said Ellison "is giving me the charge to work on developing the culture and the infrastructure for the multibillion-dollar future Oracle has ahead of it." His extensive contacts in the aircraft and automotive industries as well as in the federal government will help Oracle gain big contracts, Wall Street analysts said.

A retired U.S. Air Force lieutenant general, Abrahamson directed NASA's Space Shuttle program from 1981 to 1984 and directed the Strategic Defense Initiative nuclear-umbrella program from 1984 to 1989. However, he playfully asked reporters and analysts "not to call me General Star Wars."

The Oracle board will meet to formally approve Abrahamson's appointment later this month.

JEAN S. BOZMAN

CORRECTIONS

A story in the Sept. 14 issue of *Computerworld* on Apple Computer, Inc.'s new Performa systems should have said that the Macintosh IICI will be replaced with the IIVX and that a new model, the IIVI, will also be added.

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Oracle Corp. received $80 million in financing from Nippon Steel Corp., not $200 million as was reported in the Sept. 14 issue.

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A callout in a story in the Sept. 14 issue of *Computerworld* incorrectly identified Brian Dehn as a Legent Corp. employee. Dehn actually works at TransAmerican Insurance Group in Woodland Hills, Calif.

••••••••••

A story in the Sept. 7 issue incorrectly identified a product acquired by Computer Associates International, Inc. from Stuart P. Orr & Associates. The product, Advanced Business Software, is a set of financial, distribution and manufacturing accounting packages.



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IBM enhances PS/2; low-end line debated

BY CAROL HILDEBRAND
CW STAFF

NEW YORK — Today's anticipated announcement of an enhanced Personal System/2 line is making diehard IBM users happy, but analysts questioned whether IBM Personal Computer Co. missed the boat by delaying its long-awaited ValuePoint announcement until the end of next month.

The ValuePoint is IBM's entry-level offering for corporate buyers.

"It doesn't make any sense," said Jeffrey Henning, a senior industry analyst at BIS Strategic Decisions in Norwell, Mass. "If they didn't want to bunch their announcements, they should have pushed back the PS/2 line, not the ValuePoint."

The company is following up on a strategy aimed at targeting three different PC families at separate customers by differentiating on distribution, price and service and support. With its PS/1 line — aimed at the home market via mass merchandisers [CW, Sept. 14] — already out the door, IBM had originally planned a massive announcement today for both its premium line, the PS/2, and the ValuePoint line. But the company is pushing back the delivery date of ValuePoint. Analysts said the decision came from a combination of a parts shortage and a desire by IBM to let each line and brand team have its own separate moment in the sun.

Analysts said that even though the ValuePoint line is bound to cannibalize PS/2 business, IBM should make tracks in getting it out the door. The company badly needs a revitalization of user support for its PC division. In fact, International Data Corp. recently estimated that for the first time, Apple Computer, Inc. shipped more units than IBM did last quarter because IBM has lost so many users to competitors such as Compaq Computer Corp. and Dell Computer Corp.

Joseph Trickey, PC coordinator at Stratton-Cheeseman Management Co. in East Lansing, Mich., is one customer who said he would like to see the ValuePoint line. Although he said he expects the Model 56 will stay a part of his purchasing plans, "I wouldn't be surprised if the ValuePoint line might be what we buy a majority of."

Others have less of a sense of urgency. Charles Darnell, chief executive officer of Lithonia Lighting in Conyers, Ga., said he is more interested in the ValuePoints. "I think that [IBM] needs it more than we do. I think the customer base has learned to wait a beat or two longer before reacting to change because prices keep going down, and function keeps going up."

The new PS/2s are aimed at the corporate high end. All of the new boxes will be Micro Channel Architecture-based, with Small Computer Systems Interface adapters and enhanced Extended Graphics Array. Also standard will be 8M bytes of random-access memory, as well as OS/2 preloaded (see story above).

Another new twist will be an unprecedented three-year warranty on the machines, which brought cheers from users.

"A three-year warranty would make us very happy and hopefully would reduce maintenance costs," said Bruce Linker, assistant vice president of group information technology at Dean Witter Reynolds.

However, many analysts said they were confused about how the two lines could be differentiated enough to keep the PS/2 viable. With the ValuePoint expected to be exclusively AT bus-based, "the bottom line is, I don't think the Micro Channel can be sustained," Forrester Research, Inc. analyst William Bluestein noted.

Family values

IBM's PS/2 extensions are expected to include the following:

- **Models 56 and 57:** New systems that feature IBM's clock-doubling 486SLC2/50 chip.
- **Models 85 and 95:** The 85 is a new low-end server designed around the 33-MHz 486DX chip. It will not have the power and upgradability of the Model 95, of which there should also be two new entries. The Model 85 will replace the Model 80.
- **Models 76 and 77:** The Model 76 will be a 33-MHz 486SX box with a 3- by 3-slot/bay configuration; the Model 77 will have a similar box, as well as a 486DX2 33/66 machine with a 5- by 4-slot/bay choice. They replace the Model 70.

Pricing was not available, but sources said the new systems would cost roughly the same as current products. All of the new models comply with the International Standards Organization's ergonomic health standards, as do the three new monitors that will also be announced.

Micro giants duel at CAMP conference

CONTINUED FROM PAGE 1

run on OS/2, AIX and Pink, the object-oriented operating system it is building with Apple Computer, Inc., and pointed toward plans to add multimedia extensions, support for Windows 3.1 applications and compact disc/read-only memory distribution.

CAMP members, drawn from large and medium-size corporations in the Great Lakes region, reacted favorably to the Microsoft demo, though many called it "glitz." Still, some were swayed.

"That blew us away — it really makes you change the way you think about the future," said Michael J. Henderson, personal computer coordinator at James River Corp.'s Neenah Technical Center in Neenah, Wis.

Henderson said Windows is on some 15% of James River's desktop machines and is making further inroads.

Windows, in fact, seemed to be the front-end choice of the future for a majority of the large users in attendance, but OS/2 enjoys a strong presence, particularly as a back end among CAMP membership.

And attendees kept the Microsoft product fireworks in perspective.

"It was glitzy and very impressive," said James R. Murdock, research and systems integration consultant at a major Midwestern insurer, "but we're going ahead with OS/2." Murdock said he expects to get similar multimedia and data transfer features from vendors that support OS/2.

In his demonstration, Ballmer freely swapped files among systems loaded with DOS, Windows and NT, using the ClipBook and network .DDE feature in Windows for Workgroup Computing. He automatically upgraded schedules through an electronic-mail function, and a file updated in FoxPro for Windows automatically updated a file in Excel, which in turn changed a chart being used in a presentation.

Also demonstrated were beta-test versions of Rumba NT, Microsoft Video for Windows, which captures full-motion video, and Sound System, a 16-bit sound card Microsoft introduced last week. Ballmer said everything he demonstrated would ship by the end of first-quarter 1993.

While users at CAMP said they liked the interoperability presented by Windows for Workgroup computing and NT, its multimedia aspects were met with some skepticism.

Ashvin D. Dave, director of database and technical services at Midas International, Inc. in Chicago, said, "We're a conservative company, and what be showed takes a different mindset than what we have."

IBM, Microsoft cross swords

BOSTON — If you were looking for an answer to the Windows New Technology (NT) vs. OS/2 question, you would have walked away frustrated from the World Trade Center, the scene of just such a debate between IBM's John Soyring and Microsoft Corp.'s Adam Walkes.

Panelists and attendees — the majority of whom were independent developers — seemed to prefer IBM's OS/2. But when pressed, four of the five panelists, who included technical journalist Will Zachman, acknowledged they would opt for Microsoft's Windows, mostly because they had mouths to feed and bills to pay.

Not that they seemed happy about the decision. In fact, anti-Microsoft sentiment was high. Secret application programming interfaces (API), buggy preliminary releases and 15-minute waits for telephone support — on the caller's dime — were only a few of the accusations voiced by outraged audience members.

Soyring looked a little stronger, announcing the improved phone support and the availability of documentation for any OS/2 API. He even leaked information about an unannounced $1,800 C++ compiler. But as one audience member put it, "We probably wouldn't even be having this debate if OS/2 cost $65 per copy" in its first release.

MARY BRANDEL

Dell to start bundling OS/2; analysts nix trend notion

BY CAROL HILDEBRAND
CW STAFF

AUSTIN, Texas — Dell Computer Corp. became the largest U.S.-based vendor besides IBM to raise the OS/2 standard, announcing last week that it will make the operating system available preloaded on its personal computers. However, the bundling deal is unlikely to spur OS/2 sales.

Hopeful signs

After a sluggish start, IBM's OS/2 appears to be picking up steam



Source: Gartner Group, Inc.

A Dell spokesman said the offer was prompted by user interest and Dell's desire to be a one-stop shopping mecca. "Clearly, we've been seeing some customer demand for it, but it's also a goal to have a good variety of options for customers to choose from," he said.

Dell now offers seven operating systems preinstalled on its PCs, including Microsoft Corp.'s Windows environment. The spokesman said that although he had no estimates on the number of OS/2 machines the firm expects to ship, he thought the bundling would be evenly weighted between servers and desktop units.

Currently, U.S.-based Reply Corp. and Europe-based ICL and Ing. C. Olivetti & Co. are the only firms other than IBM that bundle OS/2. AST Research, Inc. said it did not have any near-term plans to bundle the operating system. Likewise, Compaq Computer Corp. and Everex Systems, Inc. said they did not have any immediate plans.

Analysts said that although the move may indicate a trend, it is more a reflection of a general push toward software bundling by hardware companies than a signal that OS/2 is on the rise.

"We're seeing a demand to have more and more software bundled," said Matthew Cain, an analyst at Meta Group, Inc. in Westport, Conn. "I think what Dell is doing is that for a very little incremental investment, they can offer an option that will be attractive to large corporate buyers."

Christopher Lindquist and Michael Fitzgerald contributed to this story.

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CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

IBM LAN moves signal open approach

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — IBM's sweeping announcements in the distributed networking arena last week were interpreted as a thumbs-up sign that a reorganized IBM is evolving into a more open-minded and nimble industry player.

However, immediate gains for users accustomed to filling IBM product voids from third parties are limited, some IBM shops said.

IBM sanctioned Ethernet technology with homegrown desktop adapter cards and offered up a multiprotocol intelligent wiring hub through its partnership with Chipcom Corp. [CW, Sept. 14]. The hub has hooks to IBM Token Ring concentrators and IBM's NetView/6000 distributed management system (see story page 15).

The company also doubled the performance of its 16/4M bit/sec. Token Ring adapters in servers and tripled it in clients, said Donald A. Haile, IBM LAN Systems' network systems director.

An IBM spokesman estimated that this would bring IBM card performance within 15% of the fastest cards on the market. These are generally considered to be from Madge Networks, Inc.

More distributed moves are expected this week from IBM in the areas of laptops, Personal System/2s, Distributed Systems Management and mainframes and minicomputers used as servers, analysts said.

However, while "it's of interest that IBM recognizes they have to move to more open, distributed platforms, they're a little late," said Ronald W. Meyers, vice president of technical strategic planning at Bankers Trust Co. in New York. "We're already well into implementing wiring hubs and other technology providing interconnection from LANs and workstations to IBM hosts."

"Goodness no, we're not waiting for IBM to supply us with these things," said Butch Kemper, assistant director for networking and technical services at Texas A&M University in College Station, Texas, a combined IBM Systems Network Architecture/local-area network shop using Cabletron Systems, Inc. hubs.

"If IBM wants to get down and scrap with the prices for Ethernet cards, we'll be happy to consider them. But at $250 apiece, they're not going to sell any to me" (see pricing at right). Many vendors sell Ethernet cards in the $100 to $150 range.

"We'll have to wait and see how well they will compete with third parties who have been doing [distributed networking] for quite a while," added Jerry Noble, director of telecommunications and personal computer support at The American Cancer Society in Austin, Texas.

Particularly encouraging to analysts was IBM's ahead-of-the-pack rollout of industry-standard credit-card-size portable network adapter cards for the most thriving area of the PC market: portables (see story at left). IBM reportedly turned the adapters around in a six-month development cycle.

"We see concrete evidence of a more aggressive and agile IBM, particularly in the networking systems group," said Janet Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass. "IBM is usually late to market, but now they've turned around these adapters with lightning speed," she said.

IBM users, though, seemed most interested in a frame-relay access device announced by IBM for PS/2 servers in remote LAN sites.

This is because frame relay "is the technology of preference for interconnecting LANs and for having workstations gain access to central databases," Meyers said. "It would seem a natural fit to interconnect dispersed LANs via frame relay back to the mainframe."

Should The American Cancer Society turn to frame relay to fix some throughput problems it is having with Novell, Inc. IPX protocols across the satellite network it is testing, it would be important for IBM to offer the capability, said Kyle Cooper, a senior LAN analyst.

The society would need IBM support to supplement its eight-person nationwide network staff, Cooper said.

LAN land

IBM endorsements of LAN-oriented technologies it has not previously offered could indicate the vendor has caught the distributed computing wave:

- The 8250 multiprotocol intelligent wiring hub, $2,410 to $4,465. Availability: Now.
- Ethernet adapter cards for XT/AT ($250) and Micro Channel Architecture ($395) bus computers. Availability: January 1993.
- Low-end frame-relay network access device for PS/2 LAN servers in remote sites, about $1,600. Availability: December.
- Credit-card-size Token Ring, Ethernet and 3270 adapter cards for portable PCs conforming to emerging industry standards (see story at left).

Adapters abound!

IBM's rollout last week of three credit-card-size network interfaces compatible with emerging Personal Computer Memory Card International Association (PCMCIA) standards was hailed as a sign that a more flexible, decentralized IBM is leaping behind the technology eight ball.

"PCMCIA is a brand-new technology, and boom, there they are," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C.

A $795 Token Ring PCMCIA adapter and a $375 Ethernet adapter are due out at the end of next month; a 3270 PCMCIA card for linking mobile users into IBM's SNA networks is scheduled for delivery in mid-December.

And while longtime Token Ring bigot IBM was rolling out its first line of PC Ethernet adapters that support all Ethernet media types, Ethernet pioneer 3Com Corp. was rejoining the Token Ring side of the house. The firm introduced Token Ring support on its routers and three IBM-compatible adapters, which some analysts predict will prompt price wars.

Currently, prices are as follows:

- 16-bit XT/AT bus adapter: 3Com, $695; IBM, $845.
- 16-bit Micro Channel Architecture bus adapter: 3Com, $745; IBM, $895.
- 32-bit Extended Industry Standard Architecture bus adapter: 3Com, $1,095; IBM: no product.

IBM also re-engineered its home-designed Token Ring Tropic chip for improved card performance (see story above). This is important because "generally, IBM Token Ring performance was not comparing," said Todd Dagres, vice president of communications at The Yankee Group, a Boston-based consultancy.

JOANIE M. WEXLER

Internetwork-simulation software could cut costs

Make Systems' tool aids detection of bottleneck

BY ELISABETH HORWITT
CW STAFF

MOUNTAIN VIEW, Calif. — Network asset management system vendor Make Systems, Inc. made announcements last week that may finally put sophisticated network-simulation capabilities in the hands of network managers who can no longer rely on intuition to pinpoint the source of bottlenecks.

The product is said to help users make changes to internetworked local-area network installations in order to optimize response time and resolve bottlenecks. This, in turn, will allow cost-conscious managers to get the most bang for their networking budgets, the vendor claimed.

Make's NetMaker enables users to run what-if scenarios and failure analyses to simulate the impact of network changes and to optimize the network by testing alternate scenarios for upgrading or reconfiguring an installation, according to Make.

Network managers have traditionally made educated guesses to determine the cause of a response time problem or to find the most cost-effective way to boost network throughput, according to President Stephen Howard.

However, intuitive answers are often the wrong ones when networks reach a certain level of complexity, particularly where routers are concerned, he added.

For example, boosting the capacity of one inter-LAN link can actually hurt overall network throughput because routers may be programmed to automatically send traffic over the higher-speed link, when a more efficient path may be available elsewhere, Howard said.

Although companies such as CACI Products Co. in La Jolla, Calif., and Internetix, Inc. in Upper Marlboro, Md., offer products with similar capabilities, what differentiates NetMaker is its ability to make those capabilities accessible to a network manager with just a little network-simulation modeling, said Stu Gavrin, a senior manager at Ernst & Young.

NetMaker, for example, uses color coding and graphics to pinpoint exactly where problems crop up during a network simulation, he added.

Device, protocol tracking

Another key component of NetMaker is a set of predefined libraries that keep track of the proprietary architectures and features of different network devices and protocols so that the network manager need not bother with such complexities.

"All [the network manager] needs to do is key in: 'connect all unconnected nodes in the best way possible,' " and the simulator searches intelligently for the best solution, Howard said.

This type of simulation "would be useful to anyone" as a way to pinpoint network bottlenecks and fine-tune networks, said Greg Parcell, manager of floor support systems at the Chicago Board of Trade. "The question is how easy the product is to use; I'd have to see it first."

A network manager at a major Wall Street firm who has been beta-testing NetMaker testified to the product's capabilities and ease of use. "You can pick your scenarios and let it do its thing," said the manager, who requested anonymity. "There are so many different routing choices that affect the way a network reacts, and the longer NetMaker runs, the more it knows."

By the fourth quarter, NetMaker will have libraries for the leading T1 multiplexer and router vendors, with a frame-relay library slated for the first half of 1993, Howard said.

Also available is a library of Transmission Control Protocol/Internet Protocol, with Novell, Inc.'s IPX, Digital Equipment Corp.'s DECnet and probably Apple Computer, Inc.'s AppleTalk libraries to come out in the fourth quarter, he said.

Make also plans to bring out by the fourth quarter a financial simulator with a tariff database for figuring out the costs of wide-area links, as well as a configuration designer with vendor-specific information on what components are needed for a given device.

NetMaker prices start at $20,000 for a small network of about 20 nodes and range to $300,000 for a large network.

IBM ups Unix net management

BY ELISABETH HORWITT
CW STAFF

NEW YORK — The second version of IBM's NetView/6000 shows promise of being the first LAN management system aimed at commercial Unix network users, observers said.

Announced last week, IBM's NetView/6000 is an AIX, RISC System/6000-based network management system that is said to manage Simple Network Management Protocol (SNMP)-compliant local-area network and internetworking devices, as well as IBM products such as the 6611 Network Processor.

Slated for delivery next June, NetView/6000 Version 2.1 adds significant value to the original Hewlett-Packard Co. OpenView-based product in the area of ease of use, said Mary Johnston, a principal analyst at Northeast Consulting Resources, Inc., a Boston-based consulting firm.

Key new features include an Open Software Foundation Motif- and X Window System-based graphical user interface; autodiscovery, which automatically maps LAN configurations; remote diagnostics; and threshold-setting and alert-filtering features that should help users winnow out the important network events from incoming information, Johnston said.

In addition, the product lays the foundation for providing the future ability to identify devices and lines that carry crucial business applications so that those links can be given priority, sources said.

With NetView/6000 Version 2.1, IBM is beginning to provide network managers with the troubleshooting capabilities they need to support the growing number of commercial Unix networks running crucial business applications, said John Payne, a communications architect at DHL Worldwide Express who beta-tested the product.

While engineering users with their own Unix workstations can go on working during a network failure, LAN outages can be disastrous for corporations where X terminal users run crucial business applications on Unix servers, Payne said.



NetView/6000 Version 2.1 only begins to provide such capabilities. Still, it lays the groundwork for future products that will enable managers to rapidly pinpoint the source of a network problem — be it a physical network device, a transport protocol, a server or an application, Payne said.

Also important is the product's object orientation and new end-user application programming interface (API), which should make it easier for independent software vendors to deliver applications on the platform, Johnston said.

IBM announced five additional companies committed to implementing their network management applications on NetView/6000: Nowell, Inc.; Cabletron Systems, Inc.; Ki Research, Inc. in Columbia, Md. (Digital Equipment Corp.'s DECnet network management); Elegant Communications, Inc. in Toronto (Unix systems management); and International TeleManagement Corp. in Vienna, Va. (management of non-SNMP network devices, such as T1 multiplexers).

Existing supporters include Chipcom Corp., Fibermux Corp., HP, Network Equipment Technologies, Inc., Proteon, Inc., Ungermann-Bass, Inc. and Wellfleet Communications, Inc.

IBM also announced AIX NetView Hub Management Program/6000, which is said to manage IBM 8250 Multiprotocol Intelligent Hubs announced last week; and AIX Systems Monitor/6000, which is said to enable managed Unix systems to automatically send crucial network management data to a NetView/6000 system.

In a statement of direction, IBM said it would provide a trouble-ticket application that would enable the system to track problems through to resolution.

IBM also said NetView/6000 will take on the LAN media management capabilities of IBM's OS/2-based LAN Network Manager product sometime next year. This is part of IBM's strategy to provide users with a choice of two LAN management platforms with similar capabilities, one for Unix and the other for OS/2, Johnston said.

NetView/6000 Version 2.1 is priced at $15,650.

SynOptics to replace LattisNet Manager

BY JOANIE M. WEXLER
CW STAFF

SANTA CLARA, Calif. — With competition continuing to heat up in the Unix-based distributed network management market, SynOptics Communications, Inc. said it intends to announce today a comprehensive replacement for its LattisNet Manager for Unix.

The more integrated, broad-reaching system, dubbed Optivity, reportedly leverages intelligence in SynOptics hubs to trace the path a data packet takes from one end station to another across local- and wide-area networks. The SunNet Manager-based core application allows users to plug in other SunNet Manager-based applications from both SynOptics and other vendors for more sophisticated management of a particular community of Simple Network Management Protocol (SNMP)-based devices, the vendor said.

For example, Cisco Systems, Inc.'s CiscoWorks, announced last week for close scrutiny of router networks, runs on SunNet Manager and could plug into Optivity.

Three applications from SynOptics, also set to be announced today, allow the enterprise network fabric to be managed at two levels: by network experts and by less-technical network operators, said Clive A. Hallatt, SynOptics' product marketing manager. These applications are aimed at closely managing bridges, routers and data paths between devices.

Info at hand

"This first trio of applications puts a lot of information visually on the screen," observed Michael Howard, president of Infonetics Research, Inc., a San Jose, Calif.-based consultancy.

He said SynOptics seems to be following a trend that he discovered in a recent network management study his firm conducted: "What people want are tools that reduce problem-resolution time and that less-experienced people can use."

The competition

Like competitor Cabletron Systems, Inc.'s Spectrum management tool, the system features a hierarchical polling approach to keep enterprise polling traffic to a minimum.

Unlike Spectrum, however, which manages any SNMP network regardless of whether Cabletron hubs are in it, Optivity is optimized for SynOptics hubs being in the network.

Optivity, slated to ship late next month, costs $4,995 plus the cost of the SunNet Manager platform. The three applications to be announced this week from the vendor range in price from $2,500 to $3,500 each.

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NEWS SHORTS

Microsoft releases sound system

Microsoft Corp. is once again dipping its toe into the hardware waters with the release of the Windows Sound System, a combination of sound card and software that adds sound reproduction, storage and voice-recognition capabilities to Windows workstations. The $289 product offers a synthesizer, sound chip, connectors for microphone-in, line-in, headphones-out and line-out as well as headphones and a microphone. Also included are utilities to browse sound libraries, record sounds, proofread Lotus Development Corp.'s 1-2-3 for Windows and Microsoft's Excel and perform voice-activated macros in Windows applications.

Frame relay hits milestone

Frame-relay technology took a big step forward last week when the Frame Relay Forum ratified the Network-to-Network Interface specification. The move provides the industry with a standard mechanism for allowing disparate frame-relay networks to interoperate. This means users can extend the reach of their networks among any combination of private networks and public frame-relay services.

Internetworking Sniffer on its way

Network General Corp. in Menlo Park, Calif., this week is expected to announce Expert Sniffer Internetwork Analyzer, which it claims is the first product to analyze internetworking traffic traveling between proprietary routers. It is said to monitor traffic in real time, identify network throughput or connectivity problems and perform protocol and traffic analysis to pinpoint problem sources. An optional expert system does the analysis and explains the results. Priced at $15,500, a version minus the expert system is slated to ship in the fourth quarter.

Andersen closes big CASE deal

Andersen Consulting recently closed a deal with the state of North Carolina for $1 million worth of Foundation Cooperative Processing (FCP) computer-aided software engineering tools. Grand plans for FCP include rewriting major mainframe applications to run in client/server mode. More than 2,500 users, linked via 200 local-area networks, will be blasted into the future with programs such as Microsoft's Word and Excel.

Informix adds NLM

Informix Software, Inc. said last week it will ship a NetWare Loadable Module (NLM) version of its Informix OnLine relational database for Novell, Inc.'s NetWare 3.1.1 network operating system. The NLM version, which is slated to ship by Oct. 1, will compete against other NLM databases from Oracle Corp., Sybase, Inc. and Gupta Technologies, Inc. Prices for the Informix NLM range from $4,995 for a 16-user version to $16,995 for an unlimited number of users.

Short takes

SunSelect, a business unit of Sun Microsystems, Inc., last week acquired the assets of Praxsys Technologies, Inc., a software development firm specializing in personal computer emulation technology. . . . Start-up **Cascade Communications Corp.** in Westford, Mass., last week announced that nationwide network services provider **Performance Systems International, Inc.** has signed a five-year, $10 million contract for Cascade frame-relay feeder switches. . . . **Everex Systems, Inc.** cut its prices by up to 59%, including cuts up to 47% on the Tempo series. . . . Robert W. Lucky, a top executive at AT&T Bell Laboratories, has been named vice president of applied research at **Bell Communications Research**, the regional operating companies' jointly held research and development arm. . . . The consolidation of six claims-processing systems into one at **Blue Cross/Blue Shield** of Massachusetts eliminated 68 of about 500 information systems jobs. . . . **The Object Management Group** announced that the Petrotechnical Open Software Corp. will include the Common Object Request Broker Architecture technology in its application programming interface specifications.

Global buffering beefs up Rdb

BY MELINDA-CAROL BALLOU
CW STAFF

ORLANDO, Fla. — Digital Equipment Corp. laid out a relational database management system strategy at the Rdb World Conference earlier this month that includes new versions of Rdb, migration support for the next-generation of 64-bit Alpha platforms and database-access products.

DEC began shipping Version 4.1 of Rdb in June. It features global buffering for improved data access, direct support of optical jukeboxes and capabilities that allow users to install a new version of the database while maintaining older versions elsewhere on a VAXcluster. DEC expects to release Version 4.2 before the end of this year. It will include MultiVendor Integration Architecture support and performance improvements for multimedia.

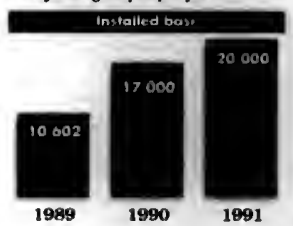
Users said they are content with the most recent Rdb release.

"Version 4.1 brought terrific performance improvements with the global buffering," said Tim Mueller, chairman of the Digital Equipment Computer Users Group Database Special Interest Group. "They also changed the way commits are assumed. Before, a transaction had to be written to the database first, but now it's committed once you've finished journaling and written to the database, which saves time."

"The global buffering is the biggest advantage to us," added Martin Keiser, a senior specialist at Du Pont Co., which is in the process of making the transition to 4.1. "We're able to curb back on the total memory that's used since users are able to share similar, buffered data."

Stacked DEC

Licensing of DEC's Rdb has grown briskly during the past few years



Source: International Data Corp. CW Chart: Michael Siggins

DEC will ultimately redesign Rdb to take better advantage of Alpha's 64-bit architecture, the officials added. And while DEC emphasized the advantages of Alpha, users expressed cautious interest.

"We would love to move to Alpha, but the layered software products aren't going to be out for a while, and we use ACMS," said Mark Lesko, project leader of the computer repair business information systems group at Lockheed Missiles and Space Co., which is based in Sunnyvale, Calif. DEC plans to stagger the release of layered software on a quarterly basis. Full VAXcluster support for DEC's Application Control Management System (ACMS) transaction processing monitor is not scheduled to be available on Alpha Open VMS platforms until early 1994.

DEC officials said sites can use SQL Services to access Rdb from non-VMS platforms via DEC's Network Architecture Support (NAS). This opens up to VMS users the wider world of IBM's Systems Network Architecture, Transmission Control Protocol/Internet Protocol, Open Systems Interconnect and LAN Manager, with support for Novell, Inc. soon to follow. Rdb will be ported to OSF/1, Microsoft Corp.'s Windows New Technology and other unannounced platforms, they added.

DEC officials also spoke about the remnants of the earlier RdbStar distributed database technology, now referred to as the Information Network. They hope to release a version of the product by early 1993 that will act as a manager of heterogeneous RDBMSs so that users will be able to access and manage data located across a range of databases [CW, June 29].

Current DEC offerings in this area include Accessworks products, which offer read access to IBM's VSAM files, DB/2 and Oracle Corp. databases and read/write access to RMS files.

Artisoft adds TCP/IP, Macintosh support

BY MICHELE DOSTERT
CW STAFF

TUCSON, Ariz. — In a major expansion of its client support strategy, Artisoft, Inc., a peer-to-peer personal computer networking provider, said it is developing software for Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity. The company is also shipping its LANtastic for Macintosh Connectivity System.

"We now support DOS, Windows and Macintosh; our TCP/IP product will ship this fall, and we are working on a native OS/2 version of LANtastic," said Joe Waldego, marketing manager for LANtastic.

By expanding its client connectivity options, Artisoft may be trying a preemptive strike against Microsoft Corp.'s Windows for Workgroups product, which, when it appears, will have peer-to-peer connectivity.

Jodi Mardesich, a San Francisco-based analyst at local-area network research firm The Burton Group, said, "Expanded connectivity or not, most large corporations are choosing client/server, not peer-to-peer, LAN network operating systems. These announcements may help Artisoft defend its workgroup and small-office client base against Workgroup for Windows, but I don't think it's going to move them out of their small-site niche."

> ARTISOFT MAY BE trying a preemptive strike against Microsoft's Windows for Workgroups product.

Artisoft is working with The Wollongong Group, Inc., a Palo Alto, Calif.-based provider of Unix-based connectivity products, to develop its LANtastic for the TCP/IP Connectivity System package. It was designed to let a workstation on a LANtastic network access a wide range of systems throughout the network, including Digital Equipment Corp.'s VAX, workstations from Hewlett-Packard Co. and Sun Microsystems, Inc., IBM mainframes and AT&T/NCR Corp. minis.

LANtastic for TCP/IP will support TCP/IP applications such as Telnet terminal emulations and File Transfer Protocol.

Artisoft's LANtastic for Macintosh Connectivity system reportedly allows for transparent integration of Macintosh computers and PostScript printers into a LANtastic network. Using a dedicated PC as a gateway, it displays PC servers as logical drives on Macintoshes. PC users, meanwhile, can access Macintosh files that have been saved onto the gateway PC.

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InterBase's unique "peer-to-peer" architecture dramatically improves network performance because frequently used data can be stored locally, while maintaining access to all data anywhere on the network. Built-in two-phase commit protects your data from duplication, loss, and concurrency problems in distributed, peer-to-peer configurations.

4. Multidimensional arrays for high-performance read/write

InterBase's multidimensional arrays store and retrieve data 10 to 40 times faster than traditional row-and-column formats. Plus, indexed arrays make it far easier for developers to build and maintain applications.

5. BLOb filters optimize complex data

InterBase sets the standard for support of Binary Large Objects (BLObs). Any length and type of data can be stored—text, graphics, sound, video, and even raw data from scientific instruments. And special BLOb filters let you compress and translate data, making InterBase the *only* database for handling complex data.

6. Easy code generation and guaranteed data integrity

No one provides better tools for maintaining data integrity and monitoring critical data. Modular, sequenceable triggers are ideal for enforcing referential integrity and other business rules. Event alerters guarantee real-time notification when data changes while minimizing network traffic and use of system resources. Only InterBase event alerters are under transaction control—guaranteeing data integrity.

7. The power of Borland is behind InterBase

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IBM

HP gives Unix minis a power boost

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. last week upped the performance range on its line of Unix minicomputers, adding two models based on the latest and fastest version of its Precision Architecture-RISC microprocessor.

At the same time, HP released a new version of HP/UX, its Unix operating system, and said it is adding Fiber Distributed Data Interface (FDDI) connectivity to its entire family of Unix minicomputers.

The new HP 9000 Models 897S and 887S mark the second time HP has incorporated the 96-MHz 7100 PA-RISC chip into one of its products. Last month, HP added 7100-based models to its HP 3000 line of proprietary minicomputers.

Power surge

HP is billing the 897S as its top-of-the-line departmental business server, operating at up to 184 transactions per second based on the Transaction Processing Council's "A" benchmark. HP's departmental offerings previously topped out at 110.5 transactions per second based on the benchmark. The company claimed that, based on the council's "A" rating, the Model 897S performs up to three times faster than IBM's Application System/400 and 50% faster than Digital Equipment Corp.'s fastest single-processor VAXserver Model 610.

One analyst noted that while users may not have an immediate need for the leap in power, the addition of the 7100 PA-RISC-based machines gives them the ability to upgrade.

"Users always want to make sure there's a high end to grow into," noted John Logan, executive vice president of the Boston-based consulting firm Aberdeen Group. "This will make users feel safe; there's a growth path."

HP is not positioning the machine for enterprise computing but will instead continue to pitch its 4-month-old line of Corporate Business Systems.

Gary Lemke, product marketing manager at HP's General Systems Division, said HP will add the 7100 to the Corporate Business System line sometime next year.

Meanwhile, pricing starts at $112,000 for the 897S and at $92,000 for the 887S. The company is charging $35,000 to upgrade from an 867 to an 887 or from an 877 to an 897.

Both new models support up to 1,850 users and will be available next month. The 897S includes 12 I/O slots; the 887S has six. Maximum storage on the 897S is 144.5G bytes; on the 887S, it is 139.1G bytes. Both come standard with 64M bytes of random-access memory, expandable to 768M bytes.

HP/UX Version 9.0, introduced by HP last week, includes HP's Visual User Environment 3.0. HP is marketing Version 9.0 for use with its workstation line as well as its minis.

FDDI for the 9000 line of Unix servers will be available in December, with pricing from $4,495 to $15,995.

AST to offer highly upgradable notebook

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — AST Research, Inc. will today announce its next-generation notebook — possibly the most upgradable notebook computer ever to hit the market.

AST's 5.9-pound PowerExec will let users upgrade the processor, the screen and the hard drive. Other vendors offer notebooks with one or two such features, but AST appears to be the first to combine all three and allow an upgrade from the base Intel Corp. 80386SL chip to an I486-class processor.

The basic display is monochrome and can be upgraded to either a passive-matrix color screen or a thin-film transistor, active-matrix color screen.

One current AST notebook user was impressed by the new box. "That's a very hot product; we'd like to have it," said Ashvin D. Dave, director of database and technical services at Midas International Corp. in Chicago.

AST has also included both a floppy drive and two Personal Computer Memory Card International Association (PCMCIA) slots.

Dan Sheppard, director of marketing for portable systems, said the company thinks PCMCIA will "explode" in the next year and will offer Token Ring and Ethernet adapter cards as well as modem cards and 3270 emulation cards. "We believe in open architecture, and [PCMCIA] gives every hardware developer a platform to design for this," he said.

AST has also designed an optional SmartPoint cableless trackball, the ability to support alkaline batteries and an algorithm that adapts the machine's power-management features to the user's habits.

"They have put a lot of the bells and whistles in one box," said Christopher Vasko, an analyst at BIS Strategic Decisions in Norwell, Mass.

AST is shipping monochrome and color versions. The monochrome versions include the PowerExec 3/25SL Model 63 with a 60M-byte hard drive for $2,395 and the PowerExec 3/25SL Model 123/W, which has a 120M-byte hard drive bundled with Microsoft Corp.'s Windows 3.1 and a SmartPoint trackball, for $2,795.

The PowerExec 3/25SL-Color Model 83 with an 80M-byte hard drive will sell for $3,495, and the PowerExec 3/25SL-Color Model 163/W will retail for $3,895.

AST expects to ship an active-matrix color screen in the fourth quarter. The company also released its $449 PowerStation, a docking unit with two slots and three drive bays.

Unix Expo attendees seek remedies

CONTINUED FROM PAGE 1

lution to their particular problem," Donnelly said.

For users looking for significant announcements, all eyes will be on IBM's show-stealing splash built around its AIX Unix variant, a few new models of the RISC System/6000 and the broadening of its client/server strategy.

One IBM demo at the show, for example, will feature a Personal System/2 running both AIX and OS/2 over the Open Software Foundation (OSF)'s micro kernel technology.

Users familiar with IBM's plans said the RS/6000 is the next target platform for running multiple operating system "personalities."

"The ability to run multiple operating systems gives IBM a platform that fits into a lot more customers' migration needs," said Chuck Hemann, manager of engineering computer operations at Harnischfeger Corp. in Milwaukee. "If you're migrating from OS/2 PCs to another platform and that new platform also runs OS/2, life is that much easier."

Users and analysts also noted IBM's rapid turnaround in just two years of paying attention to the Unix market. "As recently as a year ago, IBM's suite of applications for commercial accounts was rather narrow on AIX. That is changing," said Tom Willmott, an analyst at Aberdeen Group in Boston.

A prime example will be the introduction this week of CICS for AIX, which will allow users to off-load mainframe-based transaction processing work to RS/6000 servers [CW, Aug. 31].

Putting CICS on AIX will help "make an easy transition of our mainframe applications over to a distributed environment," said Bob Denison, open systems development unit manager at Wausau Insurance Cos. in Wausau, Wis., which has a client/server network of 30 RS/6000s.

Still, Denison is frustrated with the pace of the RS/6000's growth on the high end. His firm recently turned to Sequent Computer Systems, Inc. for a machine powerful enough to run a large database application. "We need something with more scalability," he said. "I hope we hear more [this] week about where IBM is going with the high end."

Wide focus

Overall, IBM's direction with the RS/6000 is to "span the entire range of computing and support multiple operating environments, from DOS through mainframes," said one customer who asked to remain anonymous.

Integrating the mainframe into open systems environments is of particular interest to large corporate users. "Our chief information officer now calls the IBM machines the Big Blue servers," said Sam Malek, manager of technology support at New York-based Salomon, Inc. "The Big Blue server is now finding a place in the open systems environment."

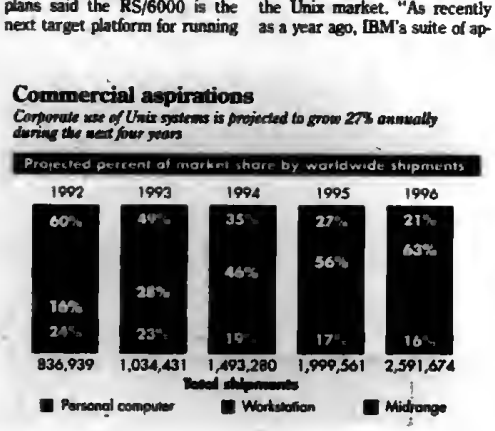
"I think the interest in Unix is much stronger in the larger shops now," agreed Bob Curran, corporate director of information systems at EG&G, Inc. in Wellesley, Mass., a $2.7 billion electronics and high-tech components company.

Curran is sending one of his managers to Unix Expo. "I thought the tutorial sessions looked excellent," he said.

Those tutorials will cover a range of topics, from Unix system administration basics to advanced networking, corporate transaction processing and integrating Microsoft Corp.'s Windows into Unix environments.

Commercial aspirations

Corporate use of Unix systems is projected to grow 27% annually during the next four years



Peaceful demonstrations

While IBM may dominate the news scene at Unix Expo this week, there will be quieter signs of life from other industry players as well.

The OSF will provide some glimpses of its technology in action by highlighting some 150 customer sites.

The OSF will also put some polite pressure on its key sponsors with its "Challenge '93" program. This brainchild of the OSF end-user steering committee calls on vendors such as IBM, Digital Equipment Corp. and Hewlett-Packard Co. to set up and demonstrate heterogeneous environments using OSF technologies such as the Distributed Computing Environment.

Sun Microsystems, Inc. will demonstrate the multiprocessing features of Solaris 2.0 running on a Compaq Computer Corp. SystemPro. HP will show off its new Series 800 servers and several key software products.

DEC will highlight its commercial Unix products and stage a competitive demo running an Alpha workstation against Sun and HP boxes.

MARYFRAN JOHNSON

The Life of Brian

"We're so confident in our network storage technology, that if you'll send us your network systems administrator for 4 hours, we'll pay that person's salary for a full day," invites Brian Swafford, founder and president of QStar Technologies, Inc.

I Was Just A Kid.

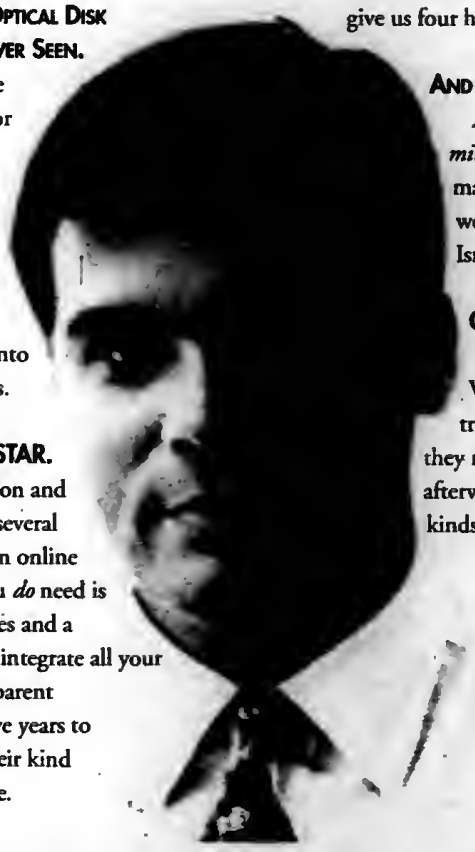
Even when I was young, I wanted to do world-changing kinds of things. I remember wanting to build the ultimate library, where anyone could access every book ever written at the touch of a button. My library would reside on a giant space station.

So I Majored In Math, And Joined NASA.

Actually it was a double major: math and physics. Math for the massively complex file management algorithms, and physics because ... well, getting that much stuff into orbit seemed like a non-trivial physics problem. Is it any wonder I found myself at NASA's National Space Science Data Center heading up Networking and Mass Storage R&D?

I Got To Build The Neatest Optical Disk Networks This Planet Has Ever Seen.

If you've heard of the Space Physics Analysis Network — or SPAN — I worked on it. And on many massive optical storage systems as well. I never did get to build my space station library of every book ever written, but it's amazing just how much information I got into orbit on revolving optical disks.



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You don't need a space station and NASA-scale resources to have several hundred GBytes of information online and at your disposal. What you *do* need is commodity mass storage devices and a group of software engineers to integrate all your media into a single, user-transparent storage network. And about five years to craft the only capabilities of their kind available anywhere, at any price.

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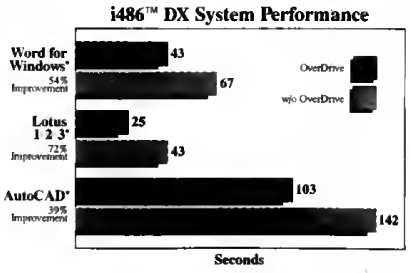
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Lotus unveils developer's kit for VIM

BY CHRISTOPHER LINDQUIST
CW STAFF

CAMBRIDGE, Mass. — In a bid to counter Microsoft Corp.'s momentum in the messaging application programming interface (API) arena, Lotus Development Corp. has unveiled a developer's kit for its own messaging interface.

The Vendor Independent Messaging (VIM) Developer's Toolkit allows software makers to build applications that conform to a single standard — VIM — for sending electronic messages.

A VIM-compliant application would theoretically be able to send messages across a diverse range of networks and operating environments without having to work through the complexity of each environment. For example, a message could be written under DOS in a mail-enabled word processor and sent directly from the word processor to another mail-enabled application on an Apple Computer, Inc. Macintosh.

Microsoft's Messaging API (MAPI), which was originally positioned as extremely Windows-centric, has recently been expanded to include some support for both DOS and the Macintosh.

The VIM steering committee consists of several of the largest software and hardware vendors in the world, including Borland International, Inc., Novell, Inc., WordPerfect Corp. and IBM.

Subject to scrutiny

Microsoft has also placed its MAPI specification before the XAPI standards committee for review and adoption. The strength of the Windows environment's presence and Microsoft's intimate connection to the product will no doubt help Microsoft attract third-party developers.

"VIM has a little more momentum right now, but Microsoft has thrown [down] the gauntlet by aligning themselves with users and XAPI," said Mike Anderson, program director for office information systems at Gartner Group, Inc. in Stamford, Conn. "It's neck and neck."

For the moment, vendors may have to hedge their bets and work with both standards if they are not to be left out in the cold, should one become a de facto standard. "It would be nice if we could have just one interface," said Ajit Kapoor, vice president at Meta Group, Inc. in Westport, Conn. "That is not the case."

Developers shared the same attitude. "One API, wouldn't that be wonderful?" said Anik Ganguly, vice president of product development at Southfield, Mich.-based Campbell Services, Inc., a maker of scheduling programs. "That would certainly be wonderful, but it looks like industry politics won't let that happen."

The VIM Developer's Toolkit supports CC:Mail on Windows and OS/2, with support for CC:Mail on DOS, Macintosh, Unix and Lotus' Notes expected in future releases.

FDDI interface for Sbus debuts

BY JOANIE M. WEXLER
CW STAFF

MILPITAS, Calif. — Users looking to bulletproof Sun Microsystems, Inc. SPARCstations and other Sbus-based computers against failures on Fiber Distributed Data Interface (FDDI) networks now have the option of linking those devices directly to both of FDDI's 100M bit/sec. redundant rings for $2,995.

Last week, Network Peripherals, Inc. became the first vendor to offer the dual-sttach capability for the Sbus platform, analysts said. Users are likely to double-link their network-critical computers, such as servers and concentrators, to FDDI to ensure their continued uptime. Multiple end-user stations then single-attach to the protected concentrator.

Top candidates

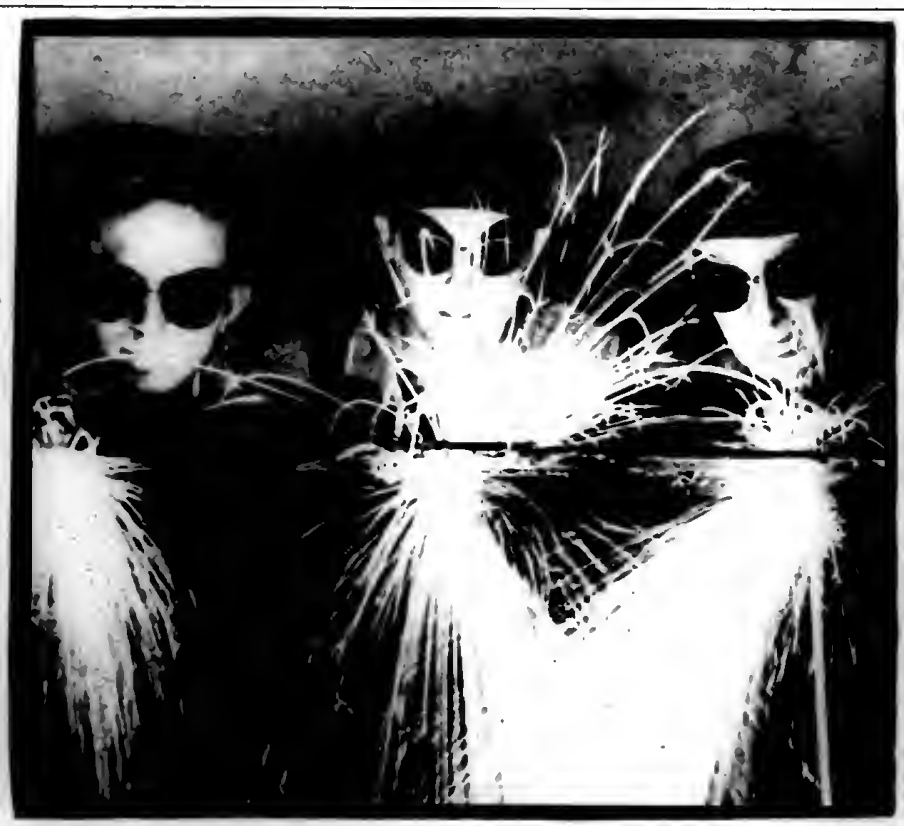
Small local-area networks of workstations running bandwidth-intensive modeling and scientific applications — such as the SPARCstation — often need optimum throughput, so they are also strong candidates for dual attachment.

Network Peripherals and other vendors already offer single-connection cards for the Sbus platform.

In the single-attach scenario, the total cost of an FDDI connection includes the price of the card (in Network Peripherals' case, $2,495, and in Sun's case, $2,995) plus the cost of a corresponding port on a concentrator.

Digital Equipment Corp. currently offers the lowest per-connection price for a concentrator st $1,625, according to Karl Shimada, vice president of market research at Rising Star Research, Inc., a consultancy in Van Nuys, Calif.

Notoriously hefty FDDI prices have been dropping by half each year for the last two years, and lower cost adapters for running 100M bit/sec. networking over copper, albeit with some distance limitations, are in the $1,500 range from 3Com Corp., IBM and others.



Just how big a deal do you think it is to connect a notebook to your network?

Yeah, we know what you're thinking. You're a networking professional. Not an industrial engineer. Which is exactly why you'll want to give our Pocket LAN Adapters™ a close look. (No goggles required.) They're so simple you can plug them in without so much as a screwdriver. And so versatile they work with virtually all notebooks, all network operating systems, and all topologies. So call 1-800-874-7875 ext. 61A for more info. Better yet, call your dealer. Because this doesn't have to be a big production.



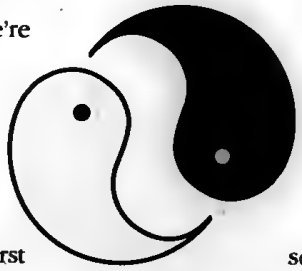
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After just one year together, we're bringing you a whole lot more.



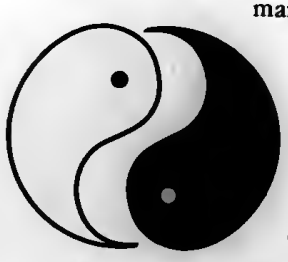
In philosophy, yin and yang come together as complementary forces to produce a complete whole that can be greater than the sum of their parts.

That's exactly what's happened since the merger of AT&T and NCR last September. By joining forces, we're now offering you the most complete set of enterprise-wide information systems and services available worldwide.

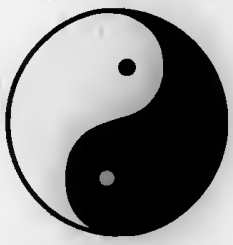


Some achievements of our first year together:

For an international investment bank, AT&T and NCR combined resources to provide end-to-end management of a complex multi-vendor network, including on-site support.



For another banking customer, AT&T brought its video-teleconferencing technology to NCR's automated teller machines.



Now people get personal, face-to-face service without going inside the bank.

AT&T ISTEL and NCR Europe announced a pan-European digital service to provide one-stop networking for multinational companies.

AT&T put its communications software into NCR's laptop computers so that people on the go can now send facsimiles and electronic mail over cellular networks.

Open systems based on AT&T Bell Laboratories' world-class research, AT&T's unsurpassed experience in communications, and NCR's leadership in computers can bring these kinds of benefits to you, too.

And we've only been working together for a year.

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Apple announces a between Windo

Apple has long been known for breakthroughs. Apple pioneered desktop publishing. Apple was first to bring the quality of Adobe™ PostScript™ to popularly priced laser printers.

Apple was the first to make high-resolution scanning as easy as one touch of a button. And Apple® LaserWriter® printers remain among the highest-rated printers for image quality and durability.

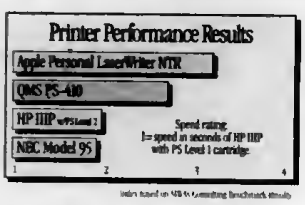
Now, Apple is extending all those breakthroughs to people who use PCs and Windows.



The PC-compatible Personal LaserWriter NTR.

The fastest printer in its class for PCs.

With a RISC controller that assembles pages at incredibly high speeds, the Apple Personal LaserWriter NTR is significantly faster than a similarly equipped Hewlett-Packard LaserJet IIIP. Yet it costs less.



The RISC-based Personal LaserWriter NTR dramatically outperforms the HP LaserJet IIIP, the QMS PS-410 and NEC Model 95.

The LaserWriter NTR comes standard with Adobe PostScript Level 2 and LaserJet II PCL compatibility, a parallel port to connect to your Windows PCs and an AppleTalk® port to connect to your Macintosh® computers. And since both of these ports are simultaneously active, it can receive documents from both Macintosh and PC users without flipping any switches.

So the LaserWriter NTR is not just faster. It's also more flexible.

The first PhotoGrade printer for PCs.



On the left, conventional laser printing. On the right, Apple PhotoGrade printing. Which will do more for your image?

Like the LaserWriter NTR, the Apple LaserWriter IIg works equally well with both Macintosh and PCs. But it adds an innovative Apple gray-scale technology called PhotoGrade™

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major breakthrough ws and Macintosh.



For high-performance networks, Ethernet is built in. And you can expand the memory to 32 megabytes for processing extremely complex documents. At Apple, we make your best work look even better.

The first one-touch scanner for Windows.

If you've ever used a scanner, you know it's an exasperating process of fiddling, futzing and adjusting. Not so with the Apple OneScanner™ for Windows. You simply pop your photograph or other artwork onto the scanner and click your mouse once. The OneScanner takes it from there. It automatically analyzes your image, sets the dpi and bit depths, adjusts brightness and contrast, and even straightens and crops. Before you know it, you've got yourself a perfect 256-level gray-scale scan.

One click. It's really that easy.

Your authorized Apple reseller will be glad to demonstrate just how much these breakthroughs can do for all your Windows PCs. For the location of a reseller in your neighborhood, call 800-538-9696, extension 145. And discover the power to make your work look better than ever. The power to be your best.™

that delivers pages with image clarity comparable to 800 dpi.



The PC-compatible LaserWriter IIg.

Documents that incorporate photographs look nothing short of amazing. And with Apple's exclusive FinePrint™ technology, even text and line art have sharper edges and smoother curves than ever before.



The OneScanner for Windows.

trademark of Microsoft Corporation. LaserJet is a registered trademark of Hewlett-Packard Company. The ad was created using Macintosh personal computers.

ADVANCED TECHNOLOGY

TECH TALK

Holographic storage

■ Amoco Laser Co., an Austin, Texas-based firm, will provide a key laser device for a holographic storage system being developed under the sponsorship of Microelectronic and Computer Technology Corp. (MCC). MCC is developing the system as part of a 1991 award from the Advanced Technology Program of the U.S. Department of Commerce. In addition to Amoco's diode-pumped, solid-state laser, the MCC holographic storage project includes contributions from several other firms. A working prototype of the MCC system is expected by 1994. That device is targeted to have a 2G-byte memory and readout times of less than 100 microseconds.

Auto screening

■ Potential blood donors are more likely to reveal their risk factors for the HIV virus to a computer than to a human interviewer, according to a study by Boston's Beth Israel Hospital, published this month in the *Journal of the American Medical Association*. Researchers determined that the 294 donors who were asked to use the computerized system — in addition to standard questionnaires and personal interviews — felt the computer-based system was more private. "Since obtaining information about behavior is essential to preventing the spread of AIDS, the computer will have an important role in screening," one of the researchers said.

Data as sounds

■ Software for developing applications that present data as sounds was announced this month by Clarity Software, a Garrison, N.Y.-based firm. The Clarity Sonification Toolkit was demonstrated at the Virtual Reality '92 conference in San Jose, Calif. Sonification can display as many as five to 10 data streams without cluttering the visual field, said Clarity executives, noting that the human mind is good at recognizing auditory patterns.

Guten tag! Bonjour! Good day!

Carnegie Mellon to demo Janus speech recognition and translation system in January

BY MELINDA-CAROL BALLOU
CW STAFF

Imagine this: At your Boston office, you speak English into your workstation, and your Tokyo-based colleague hears the Japanese translation. She responds in Japanese, and you hear her answer in English.

As world economies become more integrated, the need for multilingual technologies is more acute than ever before.

Research into speech recognition and translation has been going on for more than 30 years. But the requirements for speech recognition have been so computationally intensive that even simple tasks, such as the recognition of single words, were laborious and time-consuming when computing power was less available.

The translation of text from one language to another has progressed more rapidly than speech recognition because the text translation is less consumptive of CPU power. The combination of both technologies is now beginning to yield results.

The birth of Janus

In January, members of Carnegie Mellon University's Center for Translation, Siemens Corp., the University of Karlsruhe in Karlsruhe, Germany, and Japan's Advanced Technology Research consortium are scheduled to conduct an intercontinental demonstration of Janus, a speech recognition and translation technology.

Janus will allow members of the group to speak with one another in English, Japanese and German but under more constrained conditions than the scenario described above.

Janus, which was designed as a conference registration system, has a vocabulary of only 400 words. The translations themselves will occur in almost real time, taking about one and a half times the actual speaking time in the best cases.

The current version of the system runs primarily on Hewlett-Packard Co.'s HP 9000 Series 720 Unix workstations, in conjunction with a massively parallel system from Maspar Computer Corp. in Sunnyvale, Calif., using Digital Equipment Corp.'s DECtalk as a speech output device.

Janus addresses several complex problems: receiving and translating speech into digitized text, translating that text into the speech of the target language and outputting it via a speech synthesizer.

"Translating broad-based speech into accurate, digitized text is a very hard problem, and translating text into a target language is also very difficult. Combining them compounds two very difficult problems," said Bill Meisel, president of TMA Associates, a market research firm specializing in speech technologies based in Encino, Calif.

One problem is that computerized recognition of spoken words can often introduce errors.

"There are challenges all along the way," said Arthur McNair, a research programmer at the Neural Network Speech group at Carnegie Mellon. "Someone might say 'Hello, how are you?' and our recognizer might come back with 'Hello, how is it?' "

To overcome these difficulties, Janus offers a language model built specifically for the task of conference registration. Hypotheses created by the recognizer are parsed and matched against that model. The text is then analyzed to find the most appropriate choice.

Neural exploration

Those involved with the Janus project have been exploring the use of neural networks to help discriminate among sound patterns.

"Our language model is written in such a way that it is expecting the sentences that we have and not very much more at the moment," McNair said.

"One of our current tasks is to try and extend our system to spontaneous speech. We want people to be able to express things differently, rather than being limited to the actual sentences that we have in the system. We're trying to write a more complicated grammar for the parser so that it will accept many more types of grammatical structures and sentences," he explained.

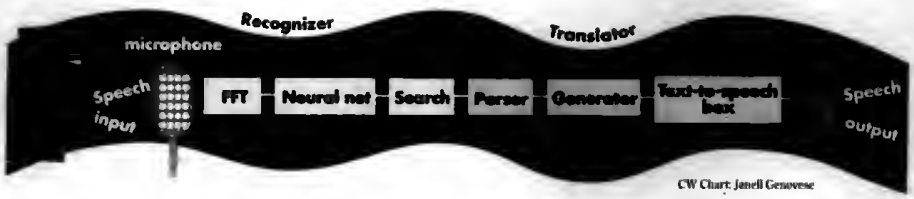
The researchers are also attempting to increase the speed of the recognition process and to support more people. They would also like to increase the vocabulary size beyond the 400 words and thus increase the range and scope of the content it addresses.

To allow for common speech, a system must have a vocabulary of at least 1,000 words; a more general discussion requires at least 10,000, according to McNair.

The largest market for speech recognition and speech synthesis systems will be for systems capable of translating spontaneous speech. But the complexity of addressing those translation issues is far beyond the capabilities of current technologies.

In order to make them nearly interactive, "almost all speech recognition and translation systems must limit themselves now to a specific set of words and tasks," McNair said.

"It is a hugely difficult technical problem to handle an unconstrained conversation like the one you and I are now having," Meisel agreed.



CW Chart: Janell Genovese

Janus mechanics

When a user speaks into Carnegie Mellon's Janus system, the workstation receives the input as wavelengths that are digitized by an analog-to-digital converter.

Then Janus uses Fast Fourier Transforms (FFT), an algorithm that was designed to take the waveform input to create a frame for each fragment of speech and convert this data into a spectagram. The FFTs also compact the data so that it is easier to feed through the system. These frames are then fed into Janus' speech recognizer. The recognizer arrives at a hypothesis of what was said, which is then sent to the translator. The translator parses the sentence to determine if it is a valid utterance according to the Janus language model.

The use of neural networks in this parsing process increases the accuracy of the Janus system as well as its efficiency because the system is able to learn parsing via examples, instead of requiring complicated grammatical structures for all possible linguistic alternatives.

If the sentence is valid, it is sent to the output language generator, which produces the translation, and the speech is output.

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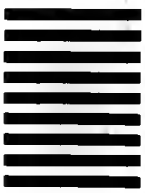
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EDITORIAL

Homespun



The landmark article "Who is us?" in the *Harvard Business Review* a couple years back defined the essence of the multinational company. It is a corporation that, while based in one specific country, is really a global citizen.

So although Honda is based in Japan, it manufactures its top-selling Accords in the U.S. and ships some abroad. The company uses American labor to build them, and it pays local American taxes. The Accord is assembled with many made-in-Japan parts, but the steel for those parts does not originate in that resources-starved nation. All things considered, the Accord is a sort of non-nation-specific product.

This is the way the world is going. And it is very important that our own policymakers fully understand this when it comes to formulating the competitive rules of the road.

With these dynamics in mind, it is hard to comprehend the flap that has followed the awarding of a $740 million Department of Defense contract for PCs to Zenith Data Systems. Zenith Data is owned by France-based Groupe Bull, which continues to have Zenith Data operate almost entirely out of the U.S.

The contract award wasn't a clean one. In fact, the DOD originally gave it to two U.S.-based vendors, but the bid-evaluation process had to be reopened when several of the 22 bidders griped about the original award.

Naturally, some of the rejected bidders started banging on the "buy-American" war drums. How can government money go to a subsidiary of a French company?

Why not? For one thing, let's assume the procurement people at the DOD determined that Zenith Data could best fit their requirements. Which means, by association, that any other accepted bid would have somehow fallen short of the mark set by Zenith Data.

More importantly, as it relates to public policy, shouldn't the federal government favor those suppliers that have the highest content of U.S. labor in their products, if they are going to favor anyone at all? I bang away on a laptop proudly carrying the logo of an all-American company, but there isn't a nickel's worth of U.S. labor that went into producing my machine. Is this vendor, for example, more certified in any nationalistic sense to fill that DOD contract than Zenith Data, which does 100% of its manufacturing here in the U.S.?

There are those who would claim that the billions of dollars in annual purchases the government makes ought to totally ignore domestic employment factors and just concentrate on getting the best product the most cheaply. Tell that to the swelled ranks of the unemployed.

But neither policymakers nor the public should be misled by the many faces of jingoism — faces that often disguise other intentions.

Bill Laberis

Bill Laberis, *Editor in chief*



LETTERS TO THE EDITOR

Job security is worker's responsibility

I wish I could say that your front-page article concerning the unionization of information systems professionals [CW, Sept. 7] shocked me, but it did not.

Many U.S. workers feel that they have a God-given right to work for a corporation of their choice until they retire.

Corporations have the right to maintain an appropriately sized work force that possesses the skills most valuable to the corporation.

Technology is, by nature, always changing, and it is a fact of life that IS professionals must keep abreast of the latest technology if they are to remain a valuable asset to a corporation.

When will workers in the U.S. realize that it is not corporations' responsibility to employ workers, but their choice?

Jill Blejwas
Underhill, Vt.

Disagrees with Scorecard's results

Your Buyer's Scorecard [CW, Aug. 31] on virus products was misleading.

You quoted a survey that claimed the three products reviewed held the "lion's share" of the market.

However, the industry's leading virus product, McAfee, which you only mentioned in passing, holds a 62% market share, according to a November 1991 independent survey conducted by Dataquest.

Our experience as a leading McAfee agent and supplier of local-area network-enabling interfaces for McAfee confirms this market share among our Fortune 1,000 clients, with few occurrences of the products you surveyed.

The fact that McAfee chooses a shareware approach to distribution should not exclude its products from any serious evaluation.

Randy Bradley
President
NetPro Computing, Inc.
Scottsdale, Ariz.

Speak now or forever hold your ...

"Users unite! Let's stand up for our basic rights" [CW, Aug. 24] led me to think about the users I have to deal with every day.

Some users are a joy to work with, but a good majority of them are not. I realize that IS-bashing is in fashion, but let's be a bit realistic.

When user comments and input are requested, it's "I'm really busy right now" or "Just create something and I'll let you know if it's what I want." If users refuse to take the time to help define the system they want, there should be no complaints about the final results.

There is no doubt that IS is responsible for helping new users get oriented. But there are too many users who are truly computer-phobic or just too unwilling to change.

Oops! Time for me to get out and help secure that IS empire. The sun never sets on our data center.

Michael Fanelli
Enka, N.C.

Big fan of Hewlett-Packard

This is regarding "Survey pegs computer downtime costs at $4 billion" [CW, Aug. 10].

At Intermountain Gas Co. in Boise, Idaho, we have had Hewlett-Packard hardware since 1980. We have upgraded accordingly as the need for more space/horsepower has become apparent.

Because user downtime is a key issue, I report to management all items that affect our users: power failures, hardware failures, software failures, etc. Our user downtime since 1984 averages out to be only 21.56 hours per year.

That equates to an average of 1.79 hours per month — with an average of seven incidents per year — that our users were affected by computer system downtime.

Of these, only a small percentage (an average of a half-hour per month) relates to the HP hardware.

I think that these figures say a great deal about HP and the reliability of its equipment.

I don't know what vendor's equipment is being used by those companies involved in your survey, but I can't say enough about the quality and reliability of HP hardware.

Dick Edwards
Boise, Idaho

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From 'whose?' to 'how much?'

W. D. REILLY



In what we now think of as the good old days, I was a man devoted to labels. I figured we could all have class, as long as we were willing to pay for it. There were a lot of us who felt that way then, although it's almost hard to imagine because the pendulum has swung so far in the other direction. Too far, I'm afraid.

Yes, our deference to labels was occasionally foolish. I dumped a brand new Apple computer in favor of the newest rage, the IBM PC. It had 64K bytes of memory, a single low-density disk drive, a color monitor with pixels the size of peach pits and a price approaching infinity. It wasn't HAL from 2001, but it had one thing the Apple didn't have: an IBM label.

Now, price is the thing and the price of computers is falling through the floor.

Mystery parts

The other day I saw a 486 machine complete with Super VGA, a 120M-byte fixed disk, a tape backup unit and two floppies for less than 2,000 bucks. For the life of me, I can't figure out how they do it. My guess is that they spend a lot of time at computer swap meets, digging up cheap parts of dubious ancestry.

Even Compaq and the venerable IBM are dropping their prices to compete with the clone companies nipping at their heels. At some point, they will reach a price below which they cannot go, and I suspect it still won't be far enough. With costly R&D divisions to maintain, they will never be able to compete dollar for dollar with smaller and more maneuverable companies.

Where does that leave them?

I read an article the other day about a man who said he would like to own Compaq equipment because of its high quality, but he would not pay a penny more for the name. What?

Does that mean he wants a BMW, but will only pay Yugo prices? When you want quality, you have to pay for it. It's one of life's little shortcomings.

The small clone vendors have been able to compete strongly in a market obsessed with price and one that views quality only within the narrow bounds of a single desktop. But, in the rapidly growing network market, it's the little things that get you. Networks, particularly large global systems, are complex enough. What you don't need is a workstation that fails because of improper design and testing.

I am probably one of the last people in the world who believes there is something wrong with a 486 PC that sells for $1,000. But my job depends on keeping the computers in operation, and I'd rather pay a small premium for quality equipment and after-sale support.



Stephanie Faucher

Don't get me wrong: I do agree that prices for some of the top name computers are high. I also think the big companies need to tighten their collective belts a notch or two.

But I like the idea that I can call these vendors if I have an unusual problem or need engineering support. Try doing that with most clone vendors and see what you get.

Big sizzle, small support

I'm acquainted with two lesser known clone makers. Both advertise in major publications. Both have nifty little 800 numbers. And both have staffs of less than five people.

I'm not suggesting that we have to buy expensive computers from companies without regard to cost. We can do what we've always done. We can shop around. We can pressure large companies to become more responsible and, if they don't come around, force them out of business by taking our dollars somewhere else.

What we cannot do is keep lowering our sights, accepting less and borrowing on our technological future. I figure if you want to dance, you should be willing to pay the band.

Reilly is the microcomputer support manager for the City of Hope Medical Center in Duarte, Calif.

Why Johnny can't get A's in C programming

EDWARD G. NILGES

In recent months, the loss of American programming jobs has generated much attention and concern.

The redoubtable Edward Yourdon has published a book on the decline of the American programmer, and in a recent issue of *Computerworld* [CW, Aug. 3], John S. Morrison wrote about the cost savings to be had by hiring programmers from the Commonwealth of Independent States (CIS), the somewhat shadowy entity that replaced the Soviet Union.

Recently, I taught the C language to a number of classes of IBM assembler programmers and had an experience that proved some of Yourdon's and Morrison's points.

The emigres have it

In the C classes, there were two distinct groups. One was made up of "ordinary Americans," people from a variety of ethnic groups, most of whom had been born in the U.S. and educated in local schools. The second group consisted of recent emigres from the Soviet Union.

Although the American students were both capable and motivated, I found that the ex-Soviet students were significantly faster at learning C. The Soviet students enjoyed the course and demanded more advanced instruction, whereas a number of the American students complained about the "complexity" of C. The ex-Soviets also seemed far more willing to check code carefully for errors.

> IT WAS CLEAR to me that . . . the Soviet students represented the "better buy" and that Americans need to damp down their salary expectations and sharply increase their technical skills, if they expect to remain in the programming racket.

It was clear to me that, for the company in question, the Soviet students represented the "better buy" and that Americans need to damp down their salary expectations and sharply increase their technical skills if they expect to remain in the programming racket.

THE PROGRAMMER'S DILEMMA

I took a pay cut to come to my current job and recently started learning C++, Visual Basic and Windows. I do this because programming is one of the few things I do that makes any money at all and because I think the idea of closing American borders to foreign skills and talent is both impossible and profoundly unfair. Why should I make 10 times what some hungry Russian or Mexican makes for coding C — unless, of course, I do it 10 times faster or 10 times better?

It is ironic, however, that after years of calling for American programmers to think like managers — to be less technically oriented and more attuned to the needs of business — U.S. companies now wish to export programming jobs to a population that, despite its high intelligence and education, has very little experience with business.

Even more ironic is the fact that the theoretical skills of CIS programmers are so highly valued when U.S. programmers have been taught that theory-based approaches don't meet the needs of business.

In spite of their grumblings about "complexity," which is merely protective coloration, U.S. programmers want to learn and improve. The problem is that they've been impeded for years by management's attachment to out-of-date technology.

Layoffs often come to the older programmer, who has been complaining for years about preservation of museum-piece equipment and who long ago ported Unix to his home 386. Adding insult to injury, this "ancient programmer" is told at his exit interview that the reason for his layoff is lack of familiarity with workstation technology.

U.S programmers do have work to do and lessons to learn. One of those lessons may be to pay less attention the next time management says it wants us to be "less technical."

Nilges is a programmer and Information Center consultant at Princeton University.

AN INEXPENSIVE PC THA
FROM THE COMPANY T

What happens when the best computer engineers in the world design a low-priced desktop PC? You get the new COMPAQ ProLinea Line of PCs, perhaps the best value PCs in the world. What happens when a clone maker designs a low-priced PC? You get what you pay for.

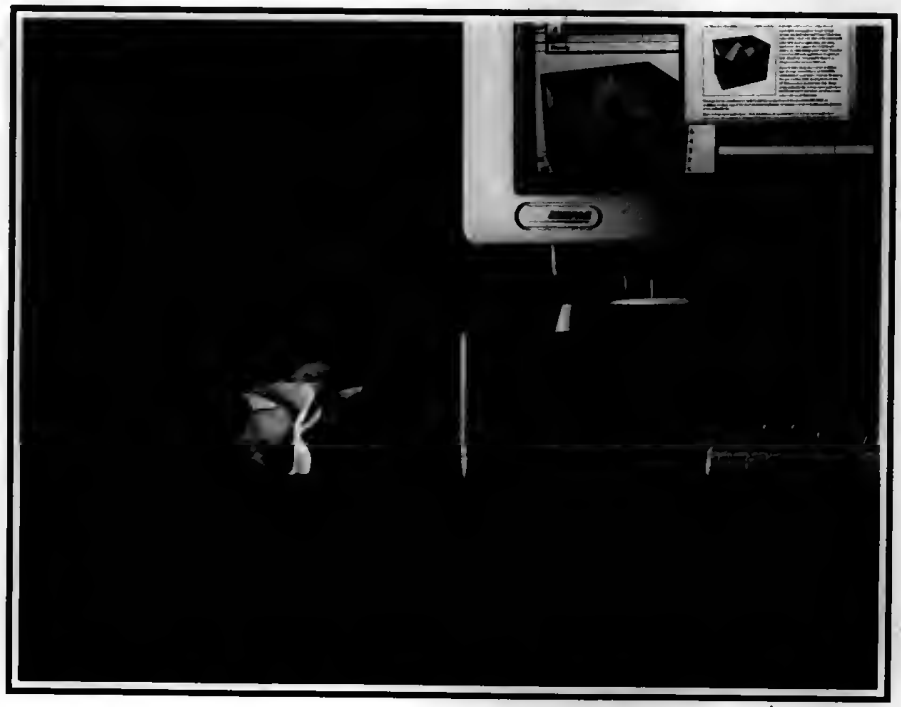
When Compaq engineers set out to build an affordable, full performance desktop PC with all the essential features, there were many options to choose from.

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We could have farmed out all the manufacturing.

We could have bought parts from the cheapest vendor in town.

But then all we would have ended up with is another inferior, low-priced



*This service is provided by contracted Service Providers and may not be available in certain geographic locations. Contact the Compaq Customer Support Center for further details. *Suggested retail price; reseller price will vary, monitor not included. price indicated is for COMPAQ ProLinea 3/25m Model 40, not pictured here. © 1992 Compaq Computer Corporation

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Intel 386SX/25 ⋖ small footprint ⋖ 2 MB RAM ⋖ 2 ISA slots ⋖ 2 drive bays ⋖ 40- or 84-MB hard drive
Intel 386SX/25, 486SX/25, 486/33, 486DX2/50 ⋖ 2 or 4 MB RAM standard ⋖ 3 ISA slots ⋖ 3 drive bays ⋖ 84- to 240-MB hard drive options
All COMPAQ ProLinea models include high-resolution 1024 x 768 video and pre-installed Microsoft MS-DOS 5.0 as published by Compaq

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And each comes with a high-resolution 1024 x 768 video system.

Most importantly, the new COMPAQ ProLinea PCs are backed not only by the assurance of the COMPAQ name, but by CompaqCare, our new service and support program. Which includes a free, one-year, on-site† limited warranty, and a host of other services.

And to go along with this new line of PCs, there's a whole new line of places you can find them. Give us a call for more details.

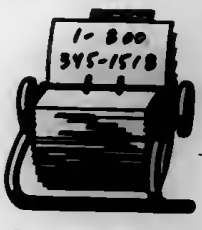
In the U.S., call us at 1-800-345-1518, ext. 215, and in Canada, just call 1-800-263-5868, ext. 215.

We think you'll be pleasantly surprised at exactly how much the COMPAQ ProLinea PCs have to offer.

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While this is old news to the nearly 18 million people who use 1-2-3,® it bears repeating: according to a recent ComputerWorld study for spreadsheets, Lotus® is still the company people prefer to do business with. And still the company that offers the best service and support—across all major platforms.

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Now, we don't expect you to believe all this just because you read it in an ad. Instead, we invite you to find out about Lotus and 1-2-3 for yourself. Just call **1-800-872-3387, ext. 7052**** for a free demo disk of 1-2-3 on the platform of your choice.***

Lotus. Still on the top of the charts.

ComputerWorld Spreadsheet Breed Preference Study
First Place Winners 1992

POSITION	DOS	WINDOWS	MACINTOSH
FIRST PLACE Prefer To Do Business With	Lotus	Lotus	Lotus
FIRST PLACE Best Service/Support	Lotus	Lotus	Lotus

Lotus 1-2-3

*Based on Software Publishers Association share data, May 1992, for North America. **In Canada, call **1-800-GO-LOTUS**. ***While supplies last. Demo disk not available for palmtop version of 1-2-3. ©1992 Lotus Development Corporation. All rights reserved. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Incorporated. OS/2 is a registered trademark of International Business Machines Corporation. UNIX is a trademark of UNIX Systems Laboratories, Inc.

Compaq, HP draw lines for their printer showdown

CLOSER LOOK
Printers

BY CAROL HILDEBRAND
CW STAFF

The new boy in town looks good, there's no doubt about that. But although Compaq Computer Corp.'s printers are gaining praise both for price point and feature set, Hewlett-Packard Co. holds the mind-set of a vast majority of customers.

Compaq announced two network printers that are plainly targeted at the heavyweight in the network printing category, HP's IIISI. According to analysts at BIS Strategic Decisions in Norwell, Mass., the Compaq printer has scored a bull's-eye. "Its kinds of features are state-of-the-art. They've definitely done a good job at looking at what is weak in the IIISI," analyst Rob Auster said.

However, Compaq has a long way to go if it is to break into a corporate mind-set that is overwhelmingly fixed on HP printers.

"There's an awful lot of people brainwashed into thinking that HP is the place to buy printers," said C. J. Meiser, another analyst at BIS Strategic Decisions. Meiser cited a BIS Strategic Decisions survey that placed HP as the No. 2 vendor of choice for network printers — before the company even had a network product out.

Meiser said he sees the printers as almost even when it comes to features, but Compaq has the advantage on price. With the PageMarq 15 listing at $3,199 and the PageMarq 20 at $5,499 — and street prices significantly lower — analysts predicted that HP would answer with a price reduction on the IIISI, as well as an upgraded model before year's end. HP declined to comment.

Analysts said Compaq made a canny move in targeting one of its native strengths: expertise in networking. The network printing market is seen as one of the growth areas in the printing arena during the next four years. According to numbers from International Data Corp. (IDC), a market research firm in Framingham, Mass., 60% of personal computer users will be on a local-area network by year's end, with an estimated 69% on the LAN bandwagon by the end of 1996.

Aim for the top

Compaq will undoubtedly start by selling to its strengths: the big corporate sites that use a majority of Compaq servers and PCs. Indeed, Eckhard Pfeiffer, president and chief executive officer of Compaq, said that of the 10 printer beta-test sites, nine have decided to purchase a Compaq printer.

Another strength is Compaq's dealer channel. Slanted toward servers and PCs, many of the dealers have integration expertise, which will help in placing the printers in a networked environment. Conversely, Auster said HP had to struggle a little at first, moving the IIISI through a dealer channel that comes from the printer side.

The company also did its homework on the parameters of the printers. The PageMarq 15 and the PageMarq 20 print at 15 and 20 page/min., respectively. IDC research also found that of printers already installed on a LAN, 65% to 70% of 12 to 19 page/min. units shipped are destined for networks. IDC estimated that a 12 to 19 page/min. printer serves between five and 20 people comfortably.

Other places in which analysts said HP will be playing catch-up came in paper handling and font switching. PageMarq 15 and PageMarq 20 paper trays hold 1,000 and 1,500 sheets, respectively, with output trays holding 500 sheets. Compaq also uses a new technology, developed with Adobe Systems, Inc., that allows a printer to automatically sense which page description language is being sent to it and automatically switch between Adobe's PostScript Level 2 and HP's Page Control Language (PCL). On the IIISI, PostScript printing capabilities are an add-on that costs extra.

However, one of the things that the IIISI can do that Compaq's print engine cannot is duplex printing, or printing on both sides of a page.

One analyst said the issue could become important, particularly as environmental awareness rises. Joel Wechsell, an analyst at Gartner Group, Inc. in Stamford, Conn., said that in a networked environment, good sorting capabilities become important. "When a printer has a 20 [page/min.] output, you don't want to discover that your stuff is at the bottom of the pile," he said.

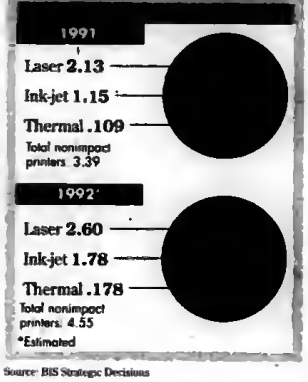
Challenge issued

Compaq is the first serious market share threat to entrenched HP, analysts say

	PPM	DPI	Price	PostScript	Duplex	Network interface
HP IIISI	17	300	$5,495	Optional	Yes	Token Ring, Ethernet, Unix
Compaq PageMarq 20	20	300 PCL 600 x 400 PostScript	$5,499	Built-in automatic switching between PCL, PS	No	Token Ring, Ethernet, AppleTalk

Laser's edge

Laser printers will account for more than half of the nonimpact printers purchased this year



Source: BIS Strategic Decisions

Network printer woes ease

BY KELLEY DAMORE
SPECIAL TO CW

While many information systems managers find LANs an attractive option, they have experienced many headaches with network printing. Printer vendors, however, have started to address the problems by producing network-ready printers, which have changed the landscape of printing by letting the printer be its own node on the network.

"Printing on the network has been a thorn in the side of IS managers. All the dissatisfaction in the past has been that the printer was too far away or was too slow. Printers hooked up to file servers offered limited capabilities because print jobs were spooled through the network," said Christine Rivera, a consultant at MicroDynamics Plus, Inc. The New York firm specializes in training managers in laser printing.

Don Davis, a manager of microcomputer support services at Boston University, noted, "The biggest advantage to network printing is that I can now print directly. I don't have to go into a queue in the file server. This has increased our productivity and performance."

Network printing doesn't come cheap, costing up to $7,000 when networking options are considered, but some managers said the productivity gains make the cost worthwhile.

At the College of Business at Oregon State University, Greg Scott, computer service manager, replaced 11 HP LaserJet Series II printers with five LaserJet IIISI networked devices. "Even though users were printing to half as many printers, the LaserJet IIISI increased printing throughput dramatically," Scott said.

One improvement users said they want is to have the network operating system and printer keep them posted on the status of print jobs, rather than forcing them to search for the status themselves.

Damore is a San Francisco-based writer.

Quattro Pro for Windows last but hoping to be best

ANALYSIS

BY CHRISTOPHER LINDQUIST
CW STAFF

Better late than never does not mean much to the man staring into a smoking cellar hole just as the fire trucks arrive. Borland International, Inc. is hoping it will still find a blaze to fight when it finally ships Quattro Pro for Windows after months of delays.

The much-ballyhooed product has been beset by delays that have caused Borland to be the last of the big spreadsheet players to enter the Microsoft Corp. Windows market. However, early users of the product said it is impressive enough, particularly in ease of use, to give competitors Lotus Development Corp. and Microsoft something to think about.

"In this first release, we really targeted ease of use and functionality," said Song Huang, product manager at Borland.

Huang noted that the product delays were caused by several factors, not the least of which was Microsoft's release of Excel 4.0. Indeed, one of Quattro Pro for Windows' core features, the Database Desktop, which allows spreadsheet users to easily access outside data, was not intended to be fully incorporated in the first version.

However, Huang said, it was decided that "we're last in the market, so we'd better be the best."

Whether that is the case remains to be seen, but beta-test user Peter Blair, a product manager at DHL Worldwide Express, said the product is impressive. In particular, he called attention to the Database Desktop. "It's a good way to look at database information while putting together a spreadsheet."

Continued on page 44

Data General trumpets the open storage system news to IBM, SUN, HP, UNISYS and ICL users!



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User survey says Dell PCs best the competition

BY JAMES DALY
CW STAFF

NEEDHAM, Mass. — Mirror, mirror on the wall, who's got the most functional, least expensive, reliable and upgradable personal computer of them all? Answer: Dell Computer Corp., at least according to a recent study of four major vendors by an independent research house.

The Austin, Texas-based Dell outgunned PCs from Apple Computer, Inc., Compaq Computer Corp. and IBM in every category of Reliability Ratings' survey of the 500 largest PC sites in the country. It was only the second time a vendor has scored best in every category.

The findings, published in a $124, 40-page document, collected a broad range of data on end-user experience with a total of 10,770 computers. Topics included reliability, service, technical support, functionality, upgradability, price, monitor and overall satisfaction.

The PCs had a total of 25 million run hours of history and were set up in more than 50 configurations, publisher Greg Strakosch said. Government and educational institutions were excluded, and the research firm surveyed only those PCs that were installed in the past year.

Mail-order vendor Dell got its highest customer satisfaction scores in reliability and price. Dell's PCs scored more than two points higher on a 10-point scale than any other vendor's PC in the aggregate for price. For the others, price was frequently listed as a major weakness.

Perhaps most important, nearly 81% of the users owning a specific Dell PC model said they would buy it a second time. The highest percentage of Dell users who said they would not buy the same model again said they would buy another Dell PC, but a newer model.

Compaq had the second-highest score in four categories, barely missing a tie with Dell in reliability and creeping close in functionality and overall performance.

In a strong indication of customer satisfaction, nearly 92% of Apple users said they would buy the same Macintosh again, more than any other vendor. Apple users described ease of use as the major strength of Apple's PCs.

IBM finished poorly in the survey, coming in last in seven of eight categories. This poor finish, however, might ironically be caused by IBM's stellar reputation. "People seem to hold IBM up to a higher standard," research director Kevin Beam said. "For many people, buying IBM was a default decision, so they have a tendency to gripe about it. And picking on IBM is like picking on the government — it's a big target with broad shoulders."

Beam also noted that the same customers who complain about IBM are, in most cases, likely to continue to purchase IBM hardware. "They complain, but they come back," he said.

One shocking discovery of the survey was the high rate of machines rated dead on arrival (DOA). The DOA rating was given for any instance in which the PC was inoperable when first installed. IBM scored the worst in this regard, with 2.33% of the 215 Personal System/2 Model 80s surveyed listed as DOA.

IN BRIEF

CA slashes Cricket price

■ To introduce its new Microsoft Corp. Windows-based image processing software, **Computer Associates International, Inc.** announced a promotional price reduction of $500 for Cricket Paint. The price cut lowers the cost of the personal computer-based imaging software from $595 to $95.

Pricing for CA-Cricket Image, an image processing system for raster-based PC graphics, was dropped from $295 to $92. The promotional prices will remain in effect until Jan. 31, 1993, the company said.

■ **Sytron Corp.** in Westboro, Mass., has announced the release of backup and archival software for OS/2 2.0. Sytos Plus Version 1.35 for OS/2 is reportedly the first backup-and-restore application with full support for OS/2 2.0, including backup of High Performance File System drives and use of long path names. It is available for a list price of $295.

Check out the Marketplace Pages on Page 103.



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pq

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Toshiba's T4400SXC: Power at a premium price

Technology Analysis — A roundup of expert opinions about new products. Summaries written by product research coordinator Derek Slater.

Toshiba America, Inc.'s T4400SXC defines the current high end of the color notebook market. The portable offers active-matrix color display and a powerful processor. Naturally, it also carries a premium price tag.

Performance: The Intel Corp. I486SX processor gives the Toshiba model a performance edge over most available notebooks.

Ease of use: Reviewers said the T4400SXC's color display is excellent, with sharply defined colors and little glare or color washout. *Infoworld* quibbled only with the lack of brightness control. The 82-key keyboard has half-size function keys.

Power supply: Tests yielded an average battery life of approximately three hours.

Service and support: Toshiba offers a one-year warranty and toll-free phone support during business hours. *Infoworld* rated the technical support as "good."

Overall: Reviewers agreed the Toshiba unit is for power users who can afford the best combination of power and sharp color display. With an 80M-byte hard disk, the T4400SXC lists for $5,499.

Toshiba T4400SXC

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
Infoworld 7/27/92	Performance leader	Bright and clear active matrix	Very good	Satisfactory size and weight	Good support	Steep price
PC Magazine 8/92	Superior	Small screen	Decreased battery life	Small and light	Toll-free support	Pretty and fast
Windows Magazine 7/92	Quick	Top-notch keyboard	Three-shell battery	Oversized; space-grabbing power cord	NC	Dual Windows toolchest available
PC Week 4/6/92	A champ	Crisp images	Just over 2.5 hours	RAM expandable to 20M bytes	NC	High price
PC Computing 9/92	Most powerful	Perfect keyboard	Passable battery scores	Bulky	NC	Could easily replace desktop PC
Users						
Wayne Yacco, Yacco Communications	■	■	▮	■	■	Power a problem with active matrix
User at a major engineering company	■	■	▙	▙	▪	Availability and quality problems
Analysts						
Margaret Jacobs, DataPro Information Services Group	■	■	▙	▙	▙	Good
Earl Rich, Faulkner Information Services	■	■	▙	■	■	Very good

Key: ■ Very good ▙ Good ▮ Fair ▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC No comment.

Vendor background information

Toshiba America Information Systems (TAIS) is an independent operating company owned by Toshiba America, Inc., which in turn is a subsidiary of Toshiba Corp. TAIS reports annual revenue of approximately $1 billion. The company is headquartered in Irvine, Calif.

Toshiba responds

Grant Johnson, product marketing manager:

Ease of use: With the color, thin-film transistor screen, brightness control is superfluous. You don't have to optimize it like you need to with black-and-white LCD. Not a single customer has complained about the lack of a brightness control.

Overall: The street price is less than $5,000.

Dell's 325NC: A good deal for nonpower users

Dell 325NC

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
Infoworld 7/27/92	Good	Difficult to view from side	Excellent	Satisfactory size and weight	Excellent	Bargain-basement price
PC Magazine 8/92	Top quarter of its class	Generally good keyboard layout	Battery life exceeds competitors	NC	Toll-free support	A pleasure to work on
Windows Magazine 7/92	NC	Keyboard close to perfect	Extensive power-saving features	Exactly notebook-size	24-hour tech fax	Best all-around value
PC Sources 6/92	Excellent overall performance	Credible color	Better than some monochromes	Reliable	Usual high standards	Doesn't deliver no-compromise color
PC Computing 9/92	Blazing disk times	Problems with screens	Longer-lasting batteries	NC	NC	Easy to like
Users						
Celeste DeSalvo, J.A. Adams, Inc.	■	■	▮	▙	■	I'm very pleased with it
Stuart Swanson, Avtech Computer Services	▙	■	▙	■	NC	Lot of value for money
Analysts						
Margaret Jacobs, DataPro Information Services Group	▙	▙	■	▙	■	Dependable
Earl Rich, Faulkner Information Services	▙	▙	▙	▙	■	Low resolution for 256 colors

Key: ■ Very good ▙ Good ▮ Fair ▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC No comment.

Vendor background information

Dell, located in Austin, Texas, reported profits of $22 million on revenue of $458 million for the quarter ended Aug. 31. Profits and revenue were up 77% and 129%, respectively, from the same quarter last year.

Dell responds

John Biebelhausen, manager of portable systems:

Ease of use: In order to package the keyboard into an 8- by 11-in. form, you have to compromise somewhere. We do have seperate F11 and F12 keys, scroll and lock keys on the top row, so it's aligned similarly to the 101-key keyboard, which isn't true of most notebooks. The color emulates all standard Video Graphics Array modes.

Passive-matrix color displays — which refresh the screen row by row instead of supplying constant power to each pixel — are generally less impressive than active matrix. However, reviewers noted that the price differential can make competent passive-matrix machines such as Dell Computer Corp.'s System 325NC an attractive buy.

Performance: Based on the Intel Corp. 80386SL chip, Dell's notebook boasts good overall performance and excellent disk speed.

Ease of use: The keyboard sports a logical layout, with a few typical notebook compromises such as half-size function keys. The color display is fine, though it produces 256 colors at a slightly reduced dot resolution (640 by 400, instead of the standard 640 by 480), according to *Windows Magazine*.

Power supply: The 325NC fared well in battery life tests. Power-saving features can extend the charge to four or more hours. The system uses nickel hydride batteries.

Service and support: Dell's support features a one-year warranty and toll-free phone support during extended business hours.

Overall: The Dell 325NC is an excellent passive-matrix system, reviewers said. The $2,999 price tag will appeal to users who do not need the costly benefits of active-matrix color.



Until now, network printers have had the same fifteen-foot restriction.

With HP network-ready LaserJets, you can put your printers where your users are.

Now you can forget about tethering your printers to some faraway server. Because network-ready LaserJet printers can be placed anywhere along your network. Just plug them in as you would PCs and you're ready to roll.

Since you're putting printers by your users, it's as if you're giving them their very own personal printer. Which means they won't have to travel as far for output. Because they're closer to the printer, they can handle some of the routine maintenance tasks, such as paper loading, themselves. Best of all, you won't have to contend with extra boxes, wires or power cables.



HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX®, Macintosh, and PC operating systems, call **1-800-752-0900,** Ext. 3073 for the HP Connectivity Solutions Guide.

HEWLETT PACKARD

*For operating HP-UX, SunOS and SCO UNIX, $300 in additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc in the U.S.A. and other countries.

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CD-ROMs ready to break out

BY MICHAEL FITZGERALD
CW STAFF

Compact disc/read-only memory (CD-ROM) technology may have yet to invade the realm of computing the way it swept through the music industry, but some analysts said they think CD-ROM is about to become a major factor in the information systems arena.

In fact, Patty Chang, an analyst at San Jose, Calif.-based market research firm Dataquest, Inc., has dubbed 1992 the year of the CD-ROM. Dataquest forecasts that the installed base of CD-ROM drives will double this year, from 1.5 million to 3 million units, she said.

Chang said two factors are driving CD-ROM growth: Microsoft Corp. and falling prices. "Microsoft is shipping new multimedia titles every six months, and other software is coming to market. There are 3,000 available [CD-ROM] titles right now, and for multimedia we see 100 titles by the end of the year," Chang said.

As for prices, some CD-ROM drives now retail for less than $200, and with system prices falling, users may be more likely to stick peripherals on their systems, Chang said.

Of more use to IS managers may be the upcoming CD-Recordable technology, which allows a user to create write-once read-many (WORM) CDs. These drives cost more than $3,000 each now, but Chang said Datasquest research shows that creating six CDs would justify buying one.

Various applications

Analysts said they think corporations will use CD-ROMs for presentations and training, while CD-Recordable drives will take advantage of the 680M-byte capacity of a CD-ROM to distribute corporate databases to salespeople and other personnel worldwide.

"The key point to remember is that CD-ROM is a publishing business," said Richard A. Bowers, executive director of the Optical Publishing Association in Columbus, Ohio. "Publishers are creating information-oriented products people want to buy, which spurs other growth."

Dataquest projects 35% annual growth rates for the CD-ROM drive industry, with 4.9 million units selling in 1996. Bowers' organization projects growth rates similar to Dataquest's.

Multimedia demand low

BY MICHAEL FITZGERALD
CW STAFF

The onslaught of multimedia personal computers in search of a market continued recently, as consumer computer giants Tandy Corp. and Packard Bell Electronics, Inc. released multimedia machines.

One analyst said the new machines, while interesting, would not spark the multimedia PC market.

"The announcements are all there and the shipments are not and are not going to be for a couple of years yet," said Richard Zwetchkenbaum, an analyst at International Data Corp. (IDC) in Framingham, Mass. Zwetchkenbaum said IDC estimates a worldwide installed base of only 100,000 multimedia PCs.

A new Sensation

Tandy, located in Forth Worth, Texas, released Sensation, its third-generation multimedia PC, and said it will market multimedia PCs in its Radio Shack stores.

Sensation will include advanced telecommunications facilities that let the computer operate as a telephone answering machine and message center; and WinMate, a new software organizer that Tandy designed to help users better organize Microsoft Corp.'s Windows package. Besides DOS 5.0 and Windows 3.1, Sensation ships with Microsoft's Works for Windows, Bookshelf for Windows and three on-line networks.

It will also have clip art, font and sound libraries, a Tandy-designed Multimedia Palette chip that gives 16 million color displays and Super VGA graphics.

Sensation, with a 25-MHz Intel Corp. I486SX chip, 4M bytes of random-access memory, a 107M-byte hard drive and a compact disc/read-only memory (CD-ROM), costs $1,999.

Chatsworth, Calif.-based Packard Bell's 486SX/25 Multimedia Computer System has an internal CD-ROM player, a three-speaker stereo system and a Sound Blaster Pro II digital audio mixer from Creative Labs, Inc. The system, with a monitor, fax modem, 4M bytes of RAM, a 210M-byte hard drive and 1,024- by 768-pixel resolution, costs $2,599.

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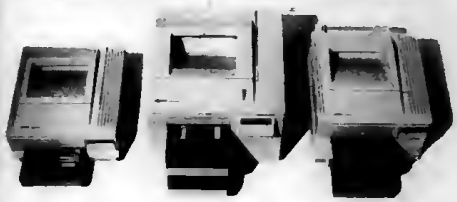
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HELPLINE

WordPerfect for Windows



Part of a series of features dealing with questions commonly asked of personal computer software vendors' support groups. This week's article focuses on WordPerfect 5.1 for Windows.

Q Are there shortcuts for formatting?

A Using the Ruler is the easiest way to make quick formatting changes such as tabs, margins, fonts, line spacing, line justification, columns and tables. Double-clicking on the tab or margin markers or any button on the Ruler will automatically bring up the corresponding dialog box so you can fine-tune your formatting choices.

Q Can I use TrueType fonts with WordPerfect 5.1 for Windows?

A Select a Windows printer driver and you will be able to print all TrueType fonts.

Q Since I cannot use the Alt key to name macros in WordPerfect 5.1 for Windows, is there an option?

A You can use the Ctrl or Ctrl+Shift keys instead, with one of the 26 letters in the alphabet. You can add macros to a button bar for easy access, or you can assign up to nine macros to the Macros pull-down menu. You can also remap the alphanumeric keys to invoke a macro.

Q After certain third-party Windows font packages (e.g., Adobe Type Manager, TrueType or Facelift for Windows) are installed, why don't the additional fonts display in the font list when a WordPerfect printer driver is selected?

A Most Windows font packages (with the exception of Fonts On The Fly and Morefonts) will add fonts to the Windows printer drivers but not to the WordPerfect printer drivers.

Make sure to restart Windows after installing your font package and then follow these steps to use the fonts that have been added to your Windows printer driver: Select a Windows printer driver (File/Select Printer/Windows/Select), choose the Update option (File/Select Printer/Update), then select the fonts desired (Font/Font).

Non-Windows font packages that work in WordPerfect 5.1 for DOS, such as Bitstream Fontware, add fonts to WordPerfect printer drivers but do not add screen fonts to match the printer fonts. You can print the fonts accurately, but you may not get a true representation of them onscreen.

If you do not plan to use other WordPerfect Windows products and wish to install these files into one directory, you can use the Custom Install option when installing.

After using the Custom Install option, you can then delete the WPC directory and the files in it. (Please note: it is not recommended that network administrators install all files to one directory — the WPC directory is also used to store individual user files.)

Q Why didn't my interim release include a printer disk?

A The interim release (dated April 4, 1992) includes a full set of program disks but no printer disks. If you are installing the interim release on a machine where WordPerfect 5.1 for Windows already exists, you don't need to reinstall your printer. Each interim release disk was designed to totally replace the original corresponding disk.

If you need to reinstall the program, you can use your original printer disk to install your printer.

DEC shows Alpha-based PC at DECUS meet in Europe

Company official promises 'aggressive' pricing

BY ROBERT LINEBACK
IDG NEWS SERVICE

CANNES, France — Digital Equipment Corp. went public with a reduced instruction set computing-based personal computer, showing a working prototype system built using its Alpha chip for the first time at the European DEC Computer Users Society (DECUS) here.

DEC's head of Entry Systems Business promised to price the first Alpha-based PCs aggressively against systems using microprocessors from Intel Corp. "We believe the Alpha PC and our cost structure are very much in line with what will be 586-based PCs," said Jesse Lipcon, vice president of the Entry Systems Business operation. He said DEC has started its early support program, and it is sending "seed" units to key developers worldwide.

DEC managers claimed the first products will offer about six times the performance of an Intel I486-based 50-MHz PC but at about the same price. But when pressed for a price and an introduction date, officials declined to give specific information and said that a launch will occur after Christmas.

"The plan is to make it available within the same time frame as [Microsoft Corp.'s Windows] NT," Paul Evans, desktop marketing manager for DEC in Europe, said after he showed the prototype at the DECUS managers meeting. "We want to bring these to the market simultaneously so there won't be a lot of hardware waiting for software."

DEC intends to make Microsoft's 32-bit Windows New Technology (NT) operating system a key part of its 64-bit Alpha-based PC strategy. DEC officials promised high performance and a ready supply of NT applications for Alpha.

First wave

The prototype systems shown at the DECUS meeting will be the basis of the first Alpha PCs, which will be deskside models, to be followed by desktop models. The prototype has a 150-MHz Alpha chip set and is capable of delivering maximum performance of 250 million instructions per second, or about six times that of a 50-MHz 486-based PC, DEC managers said.

For some customers at the meeting, DEC's aggressive attitude on price was a welcome change from previous product introductions.

"They are facing up to the fact that the Unix world is able to offer us four times the price/performance as they have been able to, and we have many suppliers to choose from," said one DEC computer user who works at a Dutch medical center. "I think DEC can succeed."

Quattro Pro for Windows

CONTINUED FROM PAGE 37

He also noted that the Interface Builder is useful for creating applications that do not look like spreadsheets. Such a feature could be beneficial to a bank that needs loan information filled in but wants to use a nonthreatening interface, he added.

Fun features

Rock Blanco, vice president of information systems at Garber Travel in Boston, said he likes the Database Desktop, adding that the spreadsheet's use of "notebooks" to store sheets as well as its use of the last sheet in the notebook for all graphics were very intuitive.

Quattro Pro for Windows can use graphics to create slide shows. As changes are made to graphics in individual sheets, the graphics are automatically updated, as are any previously created slide shows.

Borland is making a limited offer of Quattro Pro for DOS and Windows in one package for a list price of $495. Previous owners of Quattro Pro can move to the Windows version for $79.95 until Dec. 31, at which time the price will increase to $99.95.

NEW PRODUCTS

Systems

CAF Technology, Inc. has introduced AquaLite-I, a 386SXL/25-based notebook computer.

According to the company, AquaLite-I has the full features of both a mobile and a desktop computer. The product weighs 6.4 pounds and has a base unit equipped with 2M bytes of random-access memory. Via insertable memory modules, the 2M bytes of RAM are expandable to 4M, 6M or 8M bytes. One parallel and two serial ports are included, along with an external CRT port and an external keyboard port.

A 110-pin expansion port is also included for an optional Docking Station, which allows the user to expand the AquaLite-I into a desktop computer.

AquaLite-I costs $1,995.

CAF Technology
1315 Johnson Drive
City of Industry, Calif.
91745
(818) 369-3690

Software application packages

MicroLogic Software has released Version 1.0 of TrueType for DOS.

The product enables users with DOS versions of WordPerfect Corp.'s WordPerfect, Microsoft Corp.'s Word and Microsoft's Works to use the TrueType font format. The package includes 36 TrueType typefaces, which are accessed from the regular font-selection menu of WordPerfect, Word and Works and can be printed to any ink-jet, dot matrix or laser printer, the company reported.

Thousands of customized TrueType fonts can be created by merging a TrueType typeface and MicroLogic's collection of outlines, fill patterns, backgrounds and shadows.

TrueType for DOS costs $99.95.

MicroLogic Software
1351 Ocean Ave.
Emeryville, Calif. 94608
(510) 652-5464

Utilities

Software Quality Automation has released SQA:Replay.

According to the company, SQA:Replay is a utility that enables users to record every keystroke, mouse click and mouse movement for playback at a future time. SQA:Replay has a recording feature that allows for a point-and-click operation that does not require programming.

Replay features include automatic restoration of the desktop order before replay begins, the ability to selectively pause during playback and variable speed playback.

SQA:Replay works with IBM's OS/2 1.3 and 2.0 and on IBM AT, Personal System/2 or compatibles.

The product costs $99.

Software Quality Automation
1 Parker St.
Lawrence, Mass. 01843
(508) 689-0182

Macintosh products

Dantz Development Corp. has released Version 1.1 of DiskFit Pro.

The product was designed to make Apple Computer, Inc. Macintosh backup more efficient. According to the company, DiskFit Pro backs up files that are on the user's hard drive and puts them onto a SmartSet of disks that maintain an up-to-date version of the hard disk in Finder format. New or changed files are replaced with incremental backups, which keeps the SmartSet compact.

DiskFit Pro costs $125.

Dantz Development
Suite 1
1400 Shattuck Ave.
Berkeley, Calif. 94709
(510) 849-0293

Peripherals

Philips Consumer Electronics Co. has introduced FastRefresh/21, a two-page autoscanning monitor.

FastRefresh/21 can be used in computer-aided design and manufacturing, workstation, Apple Computer, Inc. Macintosh, graphics developer and desktop publishing environments. FastRefresh/21 uses a very fine pitch 0.28mm CRT and has an Invar shadow mask. Full digital front panel controls are included, and the product's microprocessor can store up to 22 video modes.

FastRefresh/21 is priced at $3,495.

Philips Consumer Electronics
1 Philips Drive
Knoxville, Tenn. 37914
(615) 521-4316

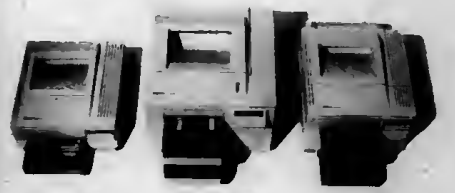


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HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking network-ready LaserJets into your system, call **1-800-752-0900, Ext. 3075** for the HP Connectivity Solutions Guide.

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BUYERS' SCORECARD

HDS mainframe users most satisfied

BY DEREK SLATER
CW STAFF

On the strength of its enhanced GX line, Hitachi Data Systems Corp. received the highest user satisfaction ratings in *Computerworld*'s annual mainframe Buyers' Scorecard.

Following HDS' rating of 89 were Amdahl Corp.'s 5990/5995 systems at 86 and IBM's Enterprise System/9000 line at 85. Digital Equipment Corp.'s VAX 9000 and Unisys Corp.'s 2200/A19 products received overall scores of 83 and 82, respectively.

The results closely mirror the findings of a similar survey conducted last year [CW, Nov. 18, 1991], with HDS' systems netting a higher rating than Amdahl this time around. Users indicated little change in their priorities since last year, with reliability still the foremost issue for high-capacity mainframe systems.

HDS' GX designation incorporates the older EX line as well as three new high-end models, offering users a more flexible upgrade path. The high-end GX 8000 series is roughly equivalent to IBM's ES/9000-class systems, offering up to 238 million instructions per second (MIPS) of processing power.

HDS has also announced new GX 6000 systems for users requiring somewhat less capacity.

GX systems earned the top scores in four of the six areas users considered most important, including reliability and overall performance.

Amdahl has annnunced an eight-way processor version of its 5995M high-end models, which could provide an advantage in the marketplace; IBM and HDS have not yet announced eight-way models.

However, Amdahl has not yet delivered the eight-way, and its current models failed to outshine its competitors in the capacity or performance areas of the Scorecard, placing in the middle of the pack in both categories.

IBM's ES/9000 models earned a solid score comparable to last year's showing. Users graded the ES/9000 as a reliable performer and gave it the highest score in availability of software and peripherals. However, it tied for third place in service and support. (See New Product In-Site [CW, May 11] for more user input on the ES/9000.)

The VAX 9000, DEC's first mainframe-class product, earned its best marks in vendor support and service and compatibility with installed systems, indicating that the VAX 9000 integrates smoothly with DEC's other systems.

Unisys has recently announced a number of new systems and enhancements in its mainframe product lines. The company has announced its new Extended Processing Architecture, which it says will expand users' ability to handle very large applications and combinations of applications.

Nevertheless, Unisys received the lowest user satisfaction rating for the second consecutive year. Users gave the Unisys products low satisfaction scores in both service and support and compatibility.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assign 1-to-10 ratings based on their satisfaction with their mainframe systems in 15 specific categories. (See the methodology on the following page for a complete description of the scoring process.) •

High-capacity mainframes

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 30 users each for all products, except DEC's VAX 9000 (23 responses).

Total possible score **100** Mean score **85**

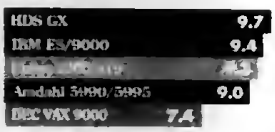
Product	Highest ratings	Lowest ratings
Hitachi Data Systems' GX series SCORE 89	Reliability Overall performance Compatibility with installed systems	Effective networking support Effective I/O channel control Vendor service and support
Amdahl's 5990/5995 SCORE 86	Compatibility with installed systems Reliability Efficient memory access time	Effective cache performance Effective networking support Reasonable acquisition and maintenance cost
IBM's ES/9000 SCORE 85	Reliability Availability of software and peripherals Compatibility with installed systems	Reasonable cost per processing cycle Effective networking support Ease of operatioo
DEC's VAX 9000 SCORE 83	Compatibility with installed systems Availability of software and peripherals Ease of migration from previous systems	Reasonable cost per processing cycle Reasonable acquisition and maintenance cost Efficient I/O channel control
Unisys' 2200/A19 SCORE 82	Reliability Efficient I/O performance Sufficient capacity	Availability of software and peripherals Reasonable acquisition and maintenance cost Effective networking support

RATINGS IN ORDER OF IMPORTANCE

HDS' GX systems earn the highest satisfaction grades in four of the Top 6 categories. DEC's VAX 9000 gets the top marks in compatibility and service and support but suffers low scores in reliability and cost.

User importance rating

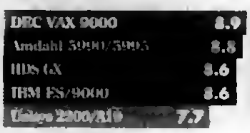
9.6 Reliability



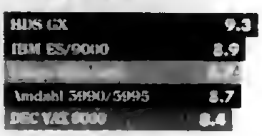
9.1 Compatibility with installed systems



9.1 Vendor service and support



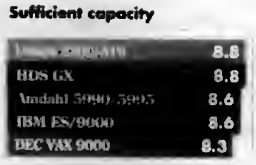
9.1 Overall performance

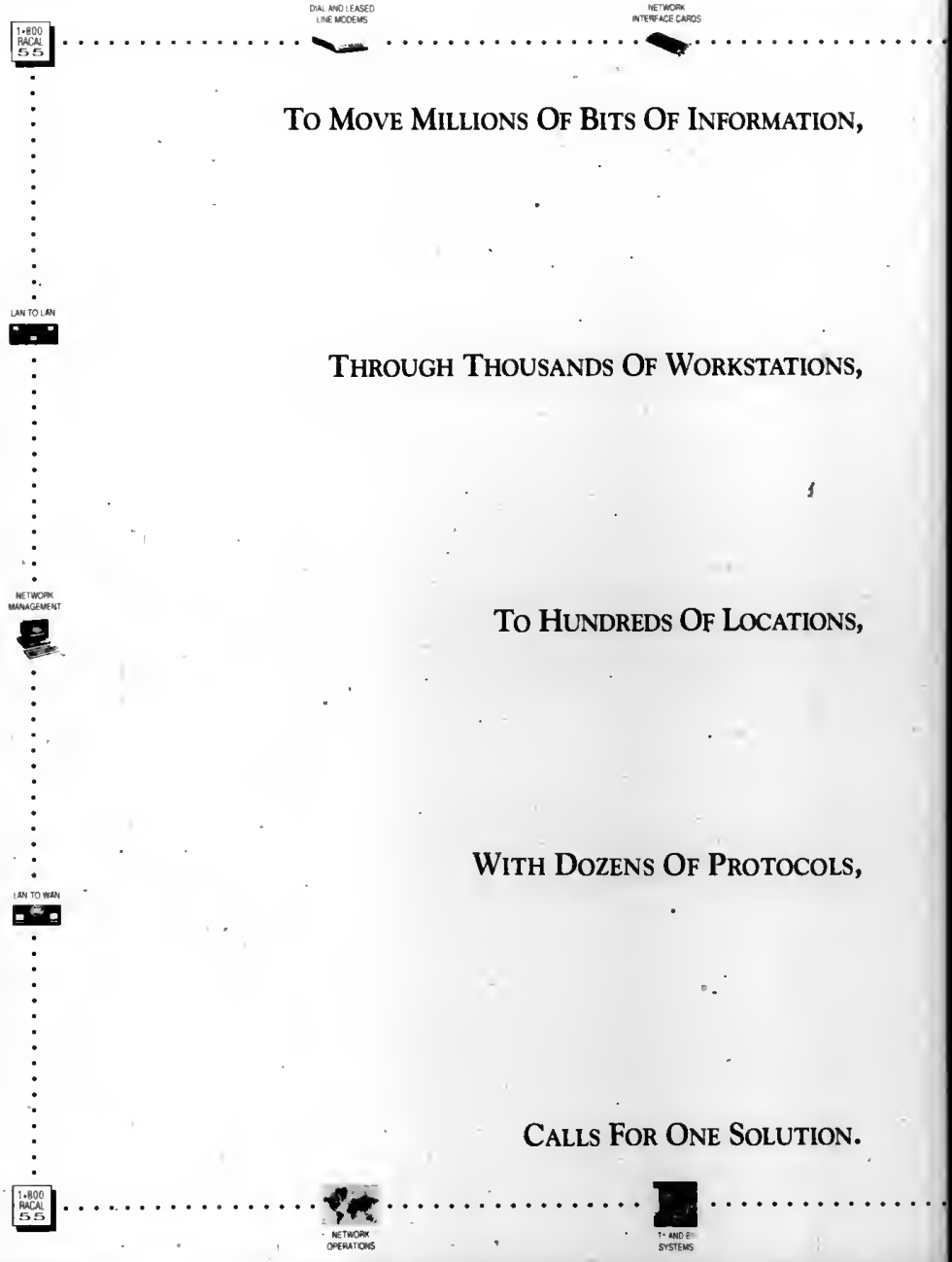


9.0 Reasonable cost per processing cycle



9.0 Sufficient capacity





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RATINGS IN ORDER OF IMPORTANCE

(Mainframes, continued from previous page)

8.9 Reasonable acquisition and maintenance cost

HDS GX	8.8
Amdahl 5990/5995	8.2
IBM ES/9000	7.5
Unisys 2200/A19	7.2
DEC VAX 9000	6.4

8.7 Availability of software and peripherals

IBM ES/9000	9.1
[illegible]	[illegible]
HDS GX	9.0
Amdahl 5990/5995	8.7
Unisys 2200/A19	6.9

8.6 Ease of migration from previous systems

HDS GX	9.2
[illegible]	[illegible]
IBM ES/9000	8.9
Amdahl 5990/5995	8.8
Unisys 2200/A19	8.4

8.6 Efficient memory access time

DEC VAX 9000	8.9
HDS GX	8.9
Amdahl 5990/5995	8.8
IBM ES/9000	8.7
Unisys 2200/A19	8.6

8.6 Efficient I/O performance

Unisys 2200/A19	8.8
HDS GX	8.7
Amdahl 5990/5995	8.6
IBM ES/9000	8.5
DEC VAX 9000	8.4

8.5 Efficient I/O channel control

Unisys 2200/A19	8.6
Amdahl 5990/5995	8.6
IBM ES/9000	8.5
HDS GX	8.5
DEC VAX 9000	8.0

8.4 Effective networking support

DEC VAX 9000	9.3
Amdahl 5990/5995	8.2
HDS GX	8.0
IBM ES/9000	7.8
Unisys 2200/A19	7.4

8.3 Efficient cache performance

HDS GX	8.9
Unisys 2200/A19	8.5
IBM ES/9000	8.3
DEC VAX 9000	8.2
Amdahl 5990/5995	7.9

8.3 Ease of operation

HDS GX	8.9
DEC VAX 9000	8.7
Amdahl 5990/5995	8.5
Unisys 2200/A19	8.0
IBM ES/9000	7.9

Verbatim

What do you like best/least about this product?
(Responses are based on most frequently stated answer. Quotes are selected from user responses.)

HDS GX

Likes
Reliability
"The host system stays up – we haven't had any downtime."

Dislikes
Support
"Hitachi can't support it."

Amdahl 5990/5995

Likes
Reliability
"It gets the job done day in and day out."

Dislikes
Not state-of-the-art
"It lags behind in feature capability and lacks support for new products."

IBM ES/9000

Likes
Reliability
"It is reliable, and the vendor service is excellent."

Dislikes
Cost
"It's too slow and too expensive."

DEC VAX 9000

Likes
Performance
"We like its processing capability and the fact that you can cluster the boxes if you need to add onto it."

Dislikes
Cost
"The maintenance cost is high, and the initial purchase price was reasonable at the time, but isn't anymore."

Unisys 2200/A19

Likes
Reliability
"It performs well and doesn't go down."

Dislikes
Display quality
"Maintenance costs are too high."

Loyalties

Would you buy the product again?
(Reasons are based on most frequently stated answer.)

HDS GX

Responses: 29



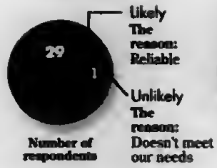
Amdahl 5990/5995

Responses: 29



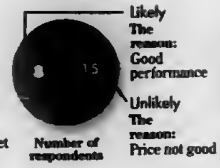
IBM ES/9000

Responses: 30



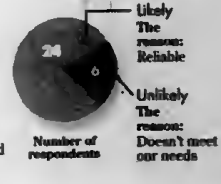
DEC VAX 9000

Responses: 23



Unisys 2200/A19

Responses: 30



Vital statistics

Total number of respondents: 143

What is your position?

CIO/Vice president	9
IS director	23
IS manager	15
Systems analyst	19
Data center or operations manager	32
Other	45

How long have you been involved with mainframe systems?

Five or more years	131
3-4 years	6
1-2 years	5
No response	1

What is your responsibility for mainframe systems?

Evaluate or recommend vendors	119
Determine need	117
Set standards for organization	103
Select vendors	101
Establish purchase agreements	76

In what industry does your company do the majority of its business?

Government agencies	33
Manufacturing	25
Education	23
Financial services	10
Transportation	9
Other	43

METHODOLOGY

First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results. User names were obtained from nonvendor sources. The response base was 30 users each for IBM's Enterprise System/9000, Hitachi Data Systems Corp.'s GX series, Unisys Corp.'s 2200/A19 products and Amdahl Corp.'s 5990/5995 systems; and 23 users for Digital Equipment Corp.'s VAX 9000.

Users rated their satisfaction with their installed products. They were not asked to compare or rate one product directly against another in the Scorecard.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for all remaining categories.

3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100. The ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10. Numbers were rounded off where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following individuals and firms for their assistance: CW Database Division; Nancy Stewart, Dataquest, Inc.; and Susan Gannon, Technology Investment Strategies Corp.

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GARTNER GROUP REPORT

Wireless LANs rescue Norwest from mortgage rate turmoil

BY JOANIE M. WEXLER
CW STAFF

MINNEAPOLIS — In a volatile economy, the business volumes at financial services firms such as Norwest Mortgage, Inc. are subject to wide swings. Wireless local-area networks are one way for companies to react with catlike quickness to these sudden changes in the economic climate.

Corporate growth fueled by falling mortgage rates caused Norwest to triple the size of its enterprise network since January, convert from 2.5M bit/sec. Datapoint, Inc. Arcnet LANs to 16M bit/sec. Token Ring LANs and interconnect three formerly autonomous networks in the Twin Cities area, said Eric Nystrom, an information services middle manager at Norwest.

However, "unexpected interest rate drops trigger an influx in the number of users applying for mortgages, which generates tremendous backlogs in back-office processing," he explained. He said the backlog of work could double or triple in a matter of two weeks, "and it is challenging to get the work done in a responsive period of time."

So Norwest decided to pursue the wireless route for the flexibility of building up and tearing down workgroups at will without wasting cabling investments and with the goal of recycling the wireless LAN equipment for future uses such as other sudden work-load increases.

Users in the makeshift workgroup are postclosing analysts who review documents prior to selling mortgages to investors. On average, Norwest builds a 10- to 12-person analyst workgroup and melds it in with its enterprise 600-user network.

NCR Corp.'s WaveLAN leverages spread-spectrum technology, which, unlike infrared schemes, requires no line of site between transmitting nodes.

Norwest was concerned about potential interference because it is situated directly across the street from the IDS Tower — one of the tallest buildings in Minneapolis — from which radio and television signals are broadcast.

"But we haven't had a single interruption," Nystrom said. "With spread spectrum, there is not much chance of interference because broadcasts occur on many frequencies simultaneously," he explained.

The fairly rigorous process Norwest must go through prior to selling loans to investors requires hiring more employees,

Continued on page 54

ON SITE

Norwest Mortgage
Minneapolis

- **Business challenge:** To accommodate a rise in customer demand for new mortgages and mortgage refinancing because of plummeting interest rates.
- **Technology:** NCR WaveLAN wireless LANs, which quickly bring added human resource troops onto the corporate network.
- **Results:** Users can respond to unpredictable economic influence on the business; company can save money by renting additional floor space for short periods of time without losing cabling investment.

Workstations turn raw product ideas into reality

Inno Design smooths rocky path from conception of idea to production with computer technology

BY MARYFRAN JOHNSON
CW STAFF

Young S. Kim was heading home from the Comdex/Fall '90 show two years ago when the idea struck for a novel twist on notebook computer design. The president and founder of Inno Design, Inc. grabbed an American Airlines napkin and started sketching.

Today, Kim can still produce the worn paper napkin with the rough sketch that eventually became Leading Edge Products, Inc.'s sleek new laptop with the built-in trackball.

Yet while such creativity is the bedrock of this 10-year-old industrial design company in Sunnyvale, Calif., it was graphical workstation technology that turned Kim's quick sketch into a three-dimensional, highly realistic image of a product in the offing.

"You need a good idea, and you need to get it through quickly so the client can see it," Kim said. "Even trained designers are not always sure if something will look great. The computer is a great tool to generate various concepts."

Inno, which takes on about 30 projects annually, specializes in design work for clients that manufacture a range of goods from consumer electronics and kitchen appliances to laptop computers. The company is also preparing to launch another line of work by licensing its own product design ideas to interested manufacturers.

As its core business technology, Inno uses a pair of Silicon Graphics, Inc. Personal Iris workstations running industrial design software from Toronto-based Alias Research, Inc. A Sun Microsystems, Inc. workstation assists on the mechanical engineering end with ProEngineer software from Parametric Technology Corp., and a pair of Intel Corp. 1486-based personal computers provide CorelDraw software from Corel Systems Corp.

The trip from rough sketch to finished design ordinarily takes

Continued on page 52

ON SITE

Inno Design, Inc.
Sunnyvale, Calif.

- **Challenge:** To use advanced computer graphics and design tools to create realistic images of design concepts and products.



A taste of Inno Design's work

- **Technology:** Two Silicon Graphics, Inc. Personal Iris 25TG and 35TG turbographics workstations running Designer 2.0 software from Alias Research, Inc. and one Sun Microsystems, Inc. workstation running ProEngineer software from Parametric Technology Corp.
- **Results:** Ability to test-market various design concepts before prototyping, faster time to market for designs and greater client satisfaction.

$59 192 307 850

By the end of this week Computerworld readers will have spent over **$59.2 Billion** on Information Technology this year — representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

Turning raw ideas into reality

CONTINUED FROM PAGE 51

several weeks when done by hand. Computer rendering, which Inno moved to three years ago, covers the same ground in a matter of hours.

The firm recently turned that speed to its advantage with a gas range design for a Korean manufacturer who wanted to "test drive" the concept with a focus group of consumers. "We did a slide show with pictures of the product that were created on the SGI workstations, and these customers liked it right away," Kim recalled. "Our clients really appreciate not only the design, but the assurance from potential users. It gives them a competitive edge."

Inno also capitalizes on its computer smarts in its advertising, which highlights "time to market" as the key benefit in using computer-aided industrial design in the creative process. Three-dimensional computer-aided industrial design modeling allows Inno designers to quickly and accurately visualize a concept, then refine and test their ideas.

So far, the only significant stumbling block with the technology has been the lack of compatibility between packages such as ProEngineer and Alias' Designer software, Kim said.

With about $2 million in annual revenue, Inno has invested at least $500,000 in its computer technology, the chief executive officer noted. His 12-member firm — whose name is short for innovative — employs nine designers, about half of whom are experts in computer-aided design.

Inno's work made it to the cover of the international *Design* magazine in November 1991, with a picture of "The Lobster," a striking black and red portable butane burner for campers. The company also designed the ProTech 2 golf travel bag, which won *Businessweek*'s best design of the year for 1991.

"Designers are not just stylists anymore," Kim said. "We're not engineers either, but we do track the trade shows so we have ideas that are practical and feasible."

IN BRIEF

NetWare adds host print tool

■ **Novell, Inc.** in Provo, Utah, is now shipping NetWare HostPrint Version 1.0, a product that was designed to make any printer on a local-area network available for host print jobs. HostPrint is a NetWare Loadable Module that runs on Novell's NetWare for SAA product. It moves the IBM print emulation sessions from the workstation to the server, thus reducing network traffic, eliminating the need for a dedicated workstation and increasing the number of print sessions available to network users, according to Novell.

NetWare HostPrint is available now and is priced from $595 to $4,995, depending on the number of print sessions supported.

Novell also announced that it is now providing a free utility to ease migration from the NetWare 2.x line to NetWare 3.11. The new NetWare Migration Utility 1.0 is available free of charge from Novell's NetWire and NetWare Express bulletin boards. It saves upgrade time by translating NetWare 2.x-based information to NetWare 3.11 bindery format and provides simple or customized migration options.

■ Unix systems vendor **Harris Corp.** in Fort Lauderdale, Fla., recently declared itself the first company to comply with the IEEE open systems standard for Posix 1003.5, which defines the interface between the Ada language and the operating system. System designers using Harris' Night Hawk line of computer and Ada can now build high-performance, multithreaded Ada applications that are readily portable to other systems running Posix-compliant Ada.

■ Milpitas, Calif.-based server maker **NetFrame Systems, Inc.** recently introduced a low-end superserver with what the vendor claims are high-availability features. The NF200ES is based on a single Intel Corp. 25-MHz 1486DX microprocessor and can support up to three dedicated 80386 I/O processors. Among its high-availability features are parity checking, error-correcting random-access memory and hot-swappable hard disks. Pricing for the system starts at $14,950.

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Software Digest Rating Report, Multiuser Database Programs, May 1992, Vol 9, No. 2. BI 1573

Social Security division awards LAN contract

BY MICHELE DOSTERT
CW STAFF

The Social Security Administration's Office of Hearing Appeals (OHA) will soon install local-area networks in 152 sites nationwide.

Hughes LAN Systems, Inc., a Mountain View, Calif.-based subsidiary of GM Hughes Electronics, has won the $7.4 million contract to install Token Ring LANs running Novell, Inc.'s NetWare.

Don Lovett, program manager at the General Services Administration's Federal Systems Integration and Management Center, said most OHA offices currently have systems from Wang Laboratories, Inc., but Wang's current bankruptcy court filing was not a factor in the move. "OHA has been planning to move to LANs for around two years," he said. "They expect to save a lot in both system costs and increased productivity."

According to Lovett, the OHA has already developed some of its own applications, using stand-alone personal computer-based databases. These applications will be modified to work on LANs and then replicated in all OHA offices.

The remote LANs will be bridged into the central headquarters LAN, which will then be bridged into the Social Security Administration's mainframes.

> "IT SAVES A lot of time if systems people have one standard configuration to manage."
>
> DON LOVETT
> GENERAL SERVICES

Like many government agencies, the Social Security Administration is trying to standardize its computing purchases. The agency chose Token Ring as one of its core technologies. "We tried to promote a configuration that would be standardized at most sites and could be centrally managed," Lovett said. "It saves a lot of time if systems people have one standard configuration to manage."

Under the terms of the contract, Hughes and its subcontractors will handle installations. Hughes will also provide documentation and training, with LAN maintenance as an optional part of the contract.

Hughes LAN Systems executives see the OHA contract as the first step in building their presence in government LANs.

"We won this contract because we researched the LAN market and used products from many different vendors to build the most cost-effective solution," said Ed Barrera, director of data network services at Hughes.

"We are now using what we learned to compete for several other government contracts," Barrera added.

James Kerrigan, manager of federal programs at G2 Research, Inc. in McLean, Va., said he thinks this contract may indeed help establish Hughes LAN Systems as a government player.

Wireless revamps at Norwest

CONTINUED FROM PAGE 51

including temporary help, and finding additional floor space and automation. "It is difficult for us to put in an economical LAN without being able to plan or knowing how long we're going to need it," Nystrom said.

To process mortgages, Norwest personnel need access to mortgage documents and applications such as file management, insurance and trust on distributed computers and the mainframe. The wireless network segment is bridged into the corporate backbone to provide this access.

To install a wireless network segment, the company runs one copper cabling connection to the WaveLAN-dedicated floor. A dedicated personal computer with both a WaveLAN adapter and a Token Ring adapter acts as a bridge between the WaveLAN network on that floor and the Token Ring networks.

On the "WaveLAN floor," a WaveLAN card attached to an antenna about 4 in. square and half an inch deep is attached to the wall with Velcro.

"The cost savings come from being able to reuse the cards and not be bound to the cabling," Nystrom said.

Cables unnecessary

The wireless LAN market is expected to exceed 100% annual growth during the next few years



*Estimated

Source: Computer Intelligence

Wireless gets unique standard

The Institute of Electrical and Electronics Engineers, Inc. 802.11 committee, charged with constructing a set of standards governing the operation of wireless LANs, was in session last week in Dayton, Ohio.

Running about a year behind schedule in defining a common set of physical-layer and media-access control specifications for both infrared- and radio-based LANs, the committee has broken into functional groups to speed up defining an interface between the two layers of the wireless topology, explained committee member Paul Nikolich.

Because of the peculiarities of wireless media, the 802.11 standards will comprise a unique topology and bridge to wired LANs such as Ethernets and Token Rings, Nikolich said.

"With wired LANs, you have a well-defined environment — you either have a good signal or you don't," Nikolich explained. "But with wireless, it's always changing."

Developing an infrastructure for tying wireless and wired LANs was one agenda item at last week's meeting.

Also on the agenda was a discussion on special problems with running time-bound services, such as delay-sensitive audio and video, across wireless media, said Donald C. Johnson, another committee member.

In addition, the committee collected comments to submit to the Federal Communications Commission regarding a proposed rule to set aside spectrum dedicated to personal communications systems, Johnson said.

JOANIE M. WEXLER

SPARCstation clone maker enters fray

Electronics unit targets commercial sector

BY MARYFRAN JOHNSON
CW STAFF

SAN JOSE, Calif. — Another player has joined in the Scalable Processor Architecture (SPARC) market, equipped with a strategy that could set it apart from the average clone vendor.

Axil Workstations, Inc., a division of $50 billion Hyundai Electronics America, last week introduced two lines of Sun Microsystems, Inc. SPARCstation 10 clones and compatibles.

Axil's Hyundai workstation line is pure clone, while its AxilStation line is "differentiated" with fax and modem capabilities built into the SPARC motherboard — rather than the Integrated Services Digital Network interface that Sun built into the original SPARCstation 10.

New pitch

Rather than competing head-to-head with Sun in technical workstation markets, Axil decided to pitch its differentiated SPARC line at new, expanding markets in commercial arenas such as manufacturing and health care. Along with the built-in fax and modem, the company said it will include voice-mail capability next January.

"The key to success in the commercial market will be our ability to hide Unix from the end user. That's where a lot of our efforts will be going in the future," said Mark Johnston, president of Axil.

To add value beyond a SPARC clone, Axil has its own research and development team working on Application Specific Integrated Circuits development and memory modules, Johnston said.

"Our vision is a computer you can pull out of the box, plug into the phone jack, and it automatically dials back to [Axil's corporate office] to download application software for a 90-day free trial," he said.

Looking into crystal ball

Analysts said that the futuristic vision of "plug-and-play workstations" is one that many vendors are pursuing these days, particularly on the low end.

"In general, people have realized there is not going to be such a thing as a PC revolution in the SPARC community," said John Morrell, an analyst at International Data Corp. in Framingham, Mass. "Targeted strategies are the way to go with small companies."

Johnston said there are many reasons a straightforward clone strategy will not work in the SPARC market, such as:

- IBM did not aggressively defend its personal computer turf, whereas Sun did so from the beginning.
- PC microprocessor development is controlled by Intel Corp., but SPARC chips fall under the broader purview of the SPARC International consortium.
- The PC market is mature and commodity-oriented while the SPARC market is still developing and leans toward value-added resellers.
- Workstation customers are more technically oriented and demanding than PC users, particularly in terms of service and support.

Winter activity

Shipment of Axil's SPARCstation 10 clones and compatibles is expected to begin in December, depending on the availability of Sun's Solaris 1.1 operating system and Texas Instruments, Inc.'s SuperSPARC chip set.

The Hyundai line of SPARCstation 2 clones began shipping this month, priced at $13,000, or about 20% cheaper than the Sun original.

One of Axil's new customers is Roger Watson, director of sales at Outsource, Inc., a Los Angeles-based business specializing in technical source-code documentation.

Outsource runs its business on three SPARCstations but turned to the clone market recently for an extra machine at lower cost.

Confidence earned

"I had to feel some confidence in these systems before I let them run my business. I can't afford to make a mistake," said Watson, who bought the Hyundai SPARCstation 2 clone.

"The design is better than Sun's, and when we had a potential problem their sales and support people were on it like vultures and dealt with it," Watson added.

WorkGroup Technologies, Inc., a market research firm in Hampton, N.H., projected that shipments of SPARC compatibles will grow by 47% annually through 1995, broadening the current installed base of 32,000 systems to 90,000 systems by the mid-decade mark.

Still, the vast share of the SPARC market still belongs to Sun. Dataquest, Inc. in San Jose, Calif., released figure showing that of 210,000 SPARC systems shipped in 1991, at least 187,000 were Sun machines.

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NEW PRODUCTS

Unix

Tricord Systems, Inc. has announced Tricord Unix/FT, a shell for networks running The Santa Cruz Operation's SCO Unix Version 3.2 and above.

Unix/FT operates on a Tricord PowerFrame server, which enables the PowerFrame server to be used as a hardware platform for performance features and fault tolerance.

The product is a software implementation of redundant arrays of inexpensive disks Level 1 that allows SCO Unix users to configure drives into mirrored arrays for fault-tolerant operation, according to the company.

To automatically replace failed drives, users can assign one or more disk drives as hot spares.

The Unix/FT software shell costs $350.

Tricord Systems
3750 Annapolis Lane
Plymouth, Minn. 55447
(612) 557-9005

Spry, Inc. has introduced SprySoft NetWare Client for Unix.

The product enables a Unix workstation to become a Novell, Inc. NetWare-compatible client for file and print services from the NetWare server, the company reported. While using native Unix commands, users running Unix applications can share data with NetWare local-area networks, according to the company.

SprySoft works with NetWare servers on network topologies that support Novell IPX/SPX, including Ethernet, Token Ring and Arcnet.

A single-user version on The Santa Cruz Operation's SCO Unix platform costs $495, and a single-user version on Sun Microsystems, Inc. SunOS costs $995.

Spry
Suite 150
1319 Dexter Ave. North
Seattle, Wash. 98109
(206) 286-1412

Corel Systems Corp. has released CorelDraw Version 2.01.1 for Unix.

The product is a graphics program that now offers additional support for a variety of Unix platforms including Hewlett-Packard Co.'s Apollo Series 700 and Sun Microsystems, Inc. Open Look SPARCstation.

CorelDraw also runs with the Open Software Foundation's Motif and offers 46 new fonts and more than 2,500 new clip-art images. CorelDraw 2.01.1 can customize print commands and has expanded support for more X Window System terminals.

The product costs $895 for a single-user version and $745 for additional licenses.

Corel
1600 Carling Ave.
Ottawa, Ontario
K1Z 8R7
(613) 728-8200

Legato Systems, Inc. has introduced Legato NetWorker, a backup and recovery software package for Unix networks.

According to the company, Legato NetWorker is bundled with the NetWorker Jukebox Module and is fully integrated with the EXB-120 Cartridge Handling Subsystem (CHS) from Exabyte Corp.

Approximately 580G bytes of unattended backup and recovery services to a multiple 8mm tape are provided by the EXB-120 CHS. NetWorker backs up Unix file servers and workstations from IBM, Digital Equipment Corp., Hewlett-Packard Co. and Sony Corp., among others.

The NetWorker Jukebox Module with the EXB-120 CHS costs $100,000.

Legato Systems
260 Sheridan Ave.
Palo Alto, Calif. 94306
(415) 329-7880

Diagnostic equipment

Landmark Research International Corp. has upgraded PC Probe Version 3.0, a diagnostic software program.

The program enables users to run up to 150 tests on a system, such as benchmark tests, virus protection and system information. Features include Super VGA video mode tests, password protection and an AT Centrally Managed OSI Protocol for TCP/IP editor.

According to the company, because tests can be run in single-test or timed-batch mode, Version 3.0 has the capability to isolate intermittent errors overnight. Users also have the option of running tests from a distant system through a modem.

PC Probe Version 3.0 costs $99.

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Clearwater, Fla. 34616
(813) 443-1331

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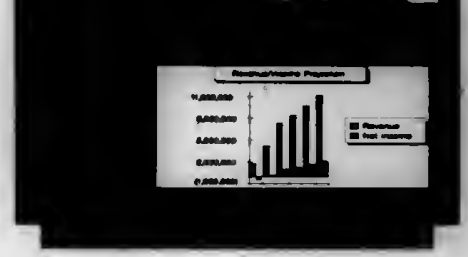


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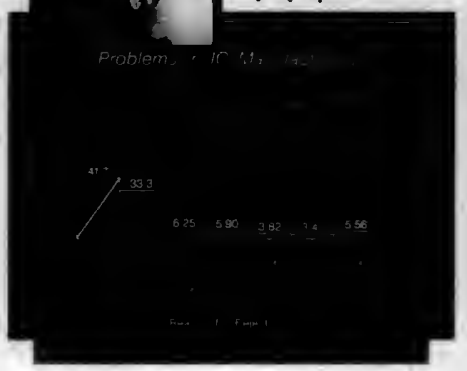
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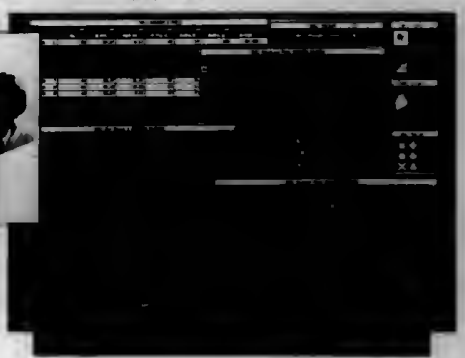


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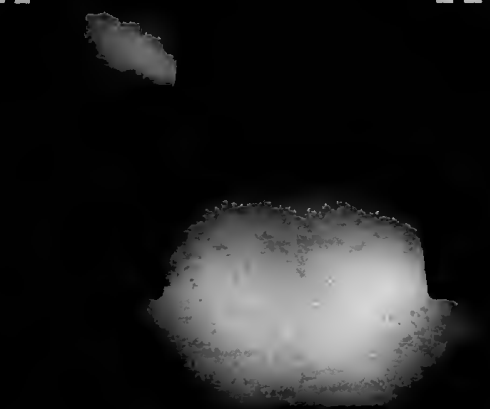
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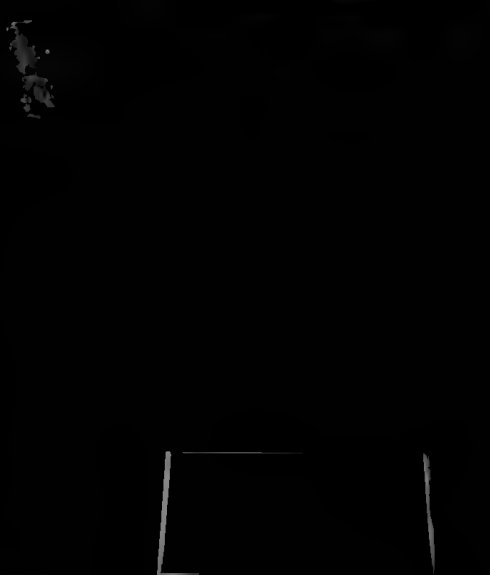
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COMMENTARY

Elisabeth Horwitt

APPN vs. TCP/IP



Early reports from the front indicate that IBM's APPN may well lose its battle against TCP/IP for control of corporate internetworking backbones.

"Maybe I underestimate how relentless SNA will be this decade, but we certainly see a push here for TCP/IP with the emergence of new applications in the Unix world," says Pat Mayer, a LAN administrator at Mortgage Guaranty Insurance Corp.

Initially a directory and routing architecture for peer-to-peer SNA networks, APPN is now being positioned by IBM as the industry standard for LAN-to-LAN communications. Toward this end, IBM is trying to get LAN hub, router and adapter vendors to implement APPN protocols on their own systems. IBM is also promising that APPN will be able to carry popular LAN protocols, such as TCP/IP.

Right now, users are definitely interested in meshing TCP/IP and SNA over the same communications backbone. And vendors such as router maker Cisco Systems are helping them do it. But not necessarily via APPN.

Wrong move

IBM did not help its own cause by recently telling an assembled room of LAN and SNA vendors they would have to pay a hefty license fee for APPN before developing any products — particularly products that make use of IBM's "crown jewels," the sophisticated routing and directory functions developed for the APPN Network Node protocol.

The problem is that IBM wants to have things all ways: make APPN a successful industry standard, recoup some of the money it invested in the protocol's development and retain some portion of the competitive advantage APPN's capabilities give its own products.

If IBM doesn't watch out, it will wind up with none of the above. Cisco recently took advantage of the confusion and resentment surrounding APPN to announce its own APPN alternative, Advanced Peer-to-Peer Internetworking. APPI is said to meld TCP/IP routing and transport

Continued on page 64

FTS-2000 users anxious to upgrade

ANALYSIS

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Users of the Federal Telecommunications System-2000 (FTS-2000) seem generally satisfied with price and service, but they say the ongoing legal and public relations brouhaha among vendors and would-be vendors is inhibiting their migration to higher bandwidth and more advanced network services.

FTS-2000 contracts were awarded to AT&T and Sprint Corp. nearly four years ago for a multibillion dollar overhaul of the government's expensive, unreliable and fragmented voice and data telecommunications system (see chart).

Almost from the beginning, the program was beset by criticism — from agencies that said its mandatory-use provisions blocked their ability to choose the best solutions; from Congress and government oversight bodies that said prices were too high; and from wanna-be FTS-2000 vendors that attacked the program on nearly every front.

The latest flare-up was sparked by MCI Communications Corp. and WilTel, which have challenged in court the government's attempts to move into areas that they said are not covered by the FTS-2000 contract. Instead, they said these "new services" should be put out for bid.

For example, WilTel protested AT&T's sale of T3 (45M bit/sec.) service, saying it is not legally available under FTS-2000 because it is a new technology — not an enhancement to an existing technology covered by FTS-2000, as AT&T claimed.

WilTel's protest to a government appeals board was upheld, and AT&T has sought relief in a federal court. In the meantime, the availability of T3 and the legal status of agencies already using T3 are in limbo.

Judges may ultimately side with MCI and WilTel in these disputes, but users are unsympathetic.

"It seems to me a T3 is just a bigger T1," said David Bittenbender, telecommunications chief at the Environmental Protection Agency (EPA). "What's the difference if I get the whole wire [T3] or just part of the wire [T1]? I'm buying a service."

Bittenbender said he hopes FTS-2000 will be able to provide the technology needed to move the huge amounts of data used by EPA laboratories. "I'd like to see them take full advantage of the technology-refreshment clauses of the contract and start doing things like higher bandwidth and services like cell relay and frame relay," he added.



GSA's Scott: *Moving to higher speeds*

Donald Scott, associate administrator for FTS-2000 at the General Services Administration (GSA), which oversees the federal program, said every request for a new or enhanced service must meet two tests if it is to be provided through FTS-2000.

Two requirements

First, it must represent a capability needed by multiple users. The second and apparently trickier question is whether a given requested capability can be provided under FTS-2000 without the need to solicit bids from all comers.

Although Scott acknowledged that the issue is subject to legal review and interpretation, his own views were clear: "We are going to move to higher and higher speeds. T3 is just one along the way, and it's not the last one. For example, when Sonet comes along, you're going to be in the gigabit range, and I fully expect that it ought to be offered on this contract or any successor."

The GSA and users argued that movement away from the concept of an agency having just one telecommunications vendor would delay their migration to new services because new federal procurements can take months or years to complete. They also said it would be difficult.

"You want to add another vendor for T3, one for Sonet, one for this and one for that? It becomes awfully expensive to manage," Scott said.

Herb Kuehne, acting director of the Telecommunication Policy Division at the U.S. Department of Agriculture, said the agency needs things such as Asynchronous Transfer Mode and broadband Integrated Services Digital Network services now, but he said he is reluctant to go after them via the GSA's FTS-2000 exception process.

"That would put part of the department on FTS-2000 and part on other facilities. We want one architecture," he said.

Nevertheless, companies such as MCI argue that greater competition would lower the government's communications costs, and various studies support that contention (see story at left).

If the GSA proves unable to satisfy the needs of FTS-2000 users through existing contracts, it is partly to blame, said Joseph J. Leo, deputy administrator for management at the Food and Nutrition Service of the Agriculture Department.

According to Leo, the 1988 contracts were put together primarily for voice communications. "They never did a real good analysis of what the data side of the house needed. They'll have to do that next time. In the meantime, FTS-2000 is going to continue to fragment and fall apart."

FTS-2000 At a Glance

Service providers: AT&T and Sprint

Users: 1.5 million in 135 federal agencies

Annual revenue: $500 million; 60% to AT&T, 40% to Sprint

Minutes of usage, switched voice and data: 300 million per month

Services: Switched voice (78%), dedicated (private-line) analog voice and digital data service (12%), compressed or wide-band videotransmission service, packet-switched service for data including electronic mail, switched data service and switched digital integrated service for voice, data and video

Reliability: Approximate percentage of calls blocked (busy): 2.5%

Trouble reports/100,000 calls: Five

Source: General Services Administration

CW Chart: Michael Siggins

Economical or not?

"We do not believe that FTS-2000 has been a good deal for the government," asserted the General Accounting Office (GAO) in a report a year ago. The GAO said the government paid $148 million above commercial rates for switched-voice service during a two-year period.

But the GSA, Sprint and AT&T said the GAO report and others reaching similar conclusions are flawed in various ways and, in any case, are not valid in the face of subsequent price reductions by the carriers. They also argued that they offer unique services, such as special invoicing and security guarantees, the cost of which are legitimately passed to customers.

Many users agreed. "The feeling is we're getting good prices," said James J. Flyzik, director of the Office of Telecommunications Management at the U.S. Department of the Treasury, the largest agency on the Sprint network. "It's very easy to say from point A to point B you could get a better price elsewhere. But you need to look at prices in the aggregate."

"We are actually adding services but spending less money because AT&T has lowered prices twice," said David Bittenbender, telecommunications chief at the EPA. Donald Scott, associate administrator for FTS-2000 at the GSA, said the program has saved the government $500 million during three years. "FTS-2000 prices are comparable now to commercial rates, and in many cases, they're lower. With the new prices, they'll be substantially lower."

New prices, to be announced in about two weeks, will be based on those submitted recently by AT&T and Sprint in a process called "price redetermination/service reallocation," mandated for years four and seven of the 10-year contract.

While the contract originally said that 60% of the revenue must go to AT&T and 40% to Sprint, the GSA may now adjust that split by shifting 40% of one carrier's traffic to the other if it is cost-effective to do so.

Protests from MCI, WilTel and others "create a lot of uncertainty and a lot of problems for us," Flyzik said. But they come with a silver lining, he added: "They do put pressure on AT&T and Sprint to keep prices down."

GARY H. ANTHES

Imaging system to help insurers capture faxed claims

BY ELLIS BOOKER
CW STAFF

BALTIMORE — Physicians and other medical service providers may soon be able to submit Medicare claims electronically even if they do not own a computer.

At the recent Medicare National Electronic Environment Conference here, Teknekron Communications Systems, Inc. announced a proprietary system called FaxEMC. The product is an imaging system that allows insurers to capture and translate standard health care claims transmitted by fax.

"Our system is designed specifically for the HCFA 1500 [Medicare] claim," said Floyd Williams III, Teknekroo's director of insurance technologies. He said the system uses off-the-shelf optical character recognition and other components. But some proprietary pre- and postprocessing elements are geared for increasing overall system accuracy, he said.

"We believe it takes one quarter the number of man-hours to process a claim this way compared with a paper system," Williams said. He estimated that insurers will save about 50 cents per processed claim with the system.

The first test of FaxEMC will be at Blue Cross/Blue Shield of Texas next month. Blue Cross/Blue Shield of Arkansas also plans to test the system this fall.

For several years, many hospitals and other large providers of medical services have been able to use a computer-to-computer format, the Electronic Media Claim, for transmitting claims to the insurer. Both Electronic Media Claim and a companion computer records standard were developed by the U.S. government's Health Care Financing Administration.

Teknekron's FaxEMC system differs by converting incoming fax images to computer-readable records in the government's format. A little over half of all Medicare Part B claims are submitted electronically. But only one-third of all Medicare providers are automated, leaving about 350,000 providers filing claims manually.

For instance, about half of the 25 million doctor bills Blue Cross/Blue Shield of California processes each year arrive electronically. The insurer said it hopes the fax-based system will make a 10% dent in the 45,000 to 50,000 paper documents it receives every day.

"If we can exceed that [target], we'll be thrilled," said Rick Lytle, Medicare operations manager at Blue Cross/Blue Shield of California.

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Horwitt

CONTINUED FROM PAGE 63

protocols with Cisco's own directory and SNA routing functions, enabling users to interconnect both TCP/IP and SNA devices over the same backbone.

The attraction for users is that they can use their existing TCP/IP links and don't have to implement a oew, complex protocol — APPN; the attraction for vendors is that, unlike IBM, Cisco is making APPI available free of charge.

IBM is also hurting its own cause by making the 3745 front end a keystone of its APPN architecture. The idea is that IBM shops already have their LANs linked to their IBM hosts via 3745s, so why not use a 3745-based APPN backbone to link the LANs to one another?

The problem, as users have found, is that the 3745 was never designed as a LAN interconnectivity device. IBM is putting a lot of effort and R&D money into solving that problem: Last week, it announced frame-relay switching and more efficient LAN connections for the 3745.

However, users may see this as Band-Aid stuff; the real question is whether they will want to continue to route their LAN connections through centralized front ends when they can just as easily interconnect LAN routers directly, according to Doug Underhill, an assistant vice president at CSX Corp.

IBM's 3745 push has more behind it than just keeping an expensive piece of hardware on the market. Behind it is IBM's central strategy of how to keep its customers as they move increasingly down to LANs and Unix systems.

IBM's dilemma is that it would like customers to stay on its mainframes as long as possible; yet if IBM does not serve their LAN needs, it will lose them entirely when they finally do move off mainframes.

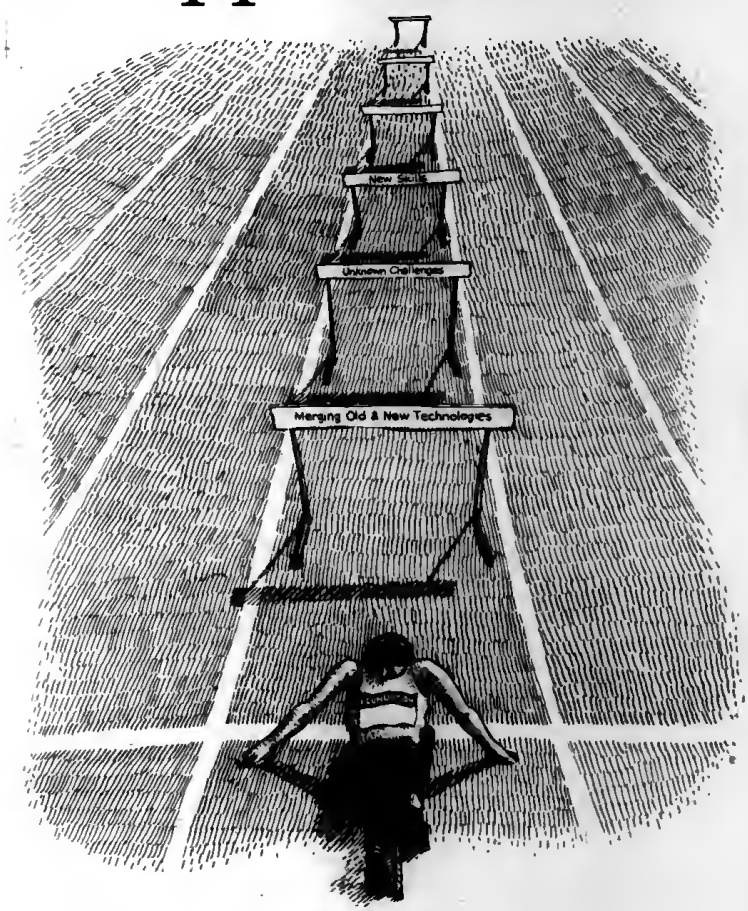
One wild card is APPN+, the next generation of APPN, which promises to allow TCP/IP, IPX and OSI — as well as SNA — to realize the full bandwidth of fast-packet connections.

In addition, other wild cards are the so-called Paris and Planet switches, IBM's next generation of communications processors.

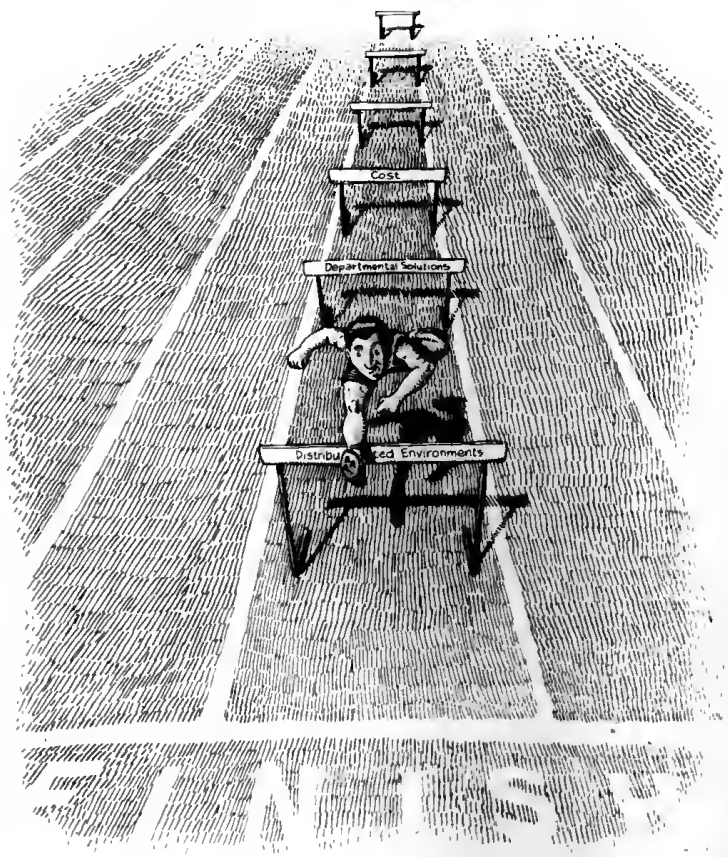
The big question is whether IBM can modernize its enterprise connectivity blueprint to meet users' peer-to-peer networking needs. Right oow, it seems likely that leading-edge companies will not wait that long.

Horwitt is a Computerworld senior editor, networking.

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X Window simplifies net management

BY JOANIE M. WEXLER
CW STAFF

Eliminating the commoo "swivel chair" syndrome of network management is an emerging use of X Window System technology. The X protocol allows users to tap into multiple networked hosts from one terminal and establish simultaneous windowed sessions.

US West NewVector Group, Inc. in Bellevue, Wash., for example, is using about 60 Applied Digital Data Systems, Inc. X terminals — including a new product family announced last month — to monitor its many diverse cellular telephone switches in its Minneapolis-to-Seattle cellular customer network.

"The X terminal is basically a resource-saver. We've replaced four to six PCs or terminals with one X terminal on each network manager's desktop," said Bill Holt, manager of production opeo systems administratioo at the cellular paging subsidiary of US West.

In an effort to resuscitate its 2% market share in the highly combative X market, NCR Corp.-owned Applied Digital recently replaced its entire line of X terminals with reduced instruction set computing-based products. The company swapped in a line of 25-MHz Intel Corp. I960-based displays sporting performance, price and graphics resolution more in tune with the tastes of commercial users, explained Jack E. Denenberg, an NCR/Applied Digital product manager.

US West's NewVector division has had the new $2,595 to $5,895 "Viper" products in alpha testing for about three weeks. So far, the test has shown "very positive performance improvements" over both NCR/Applied Digital'a older terminals and those from Network Computing Devices, Inc. in Mountain View, Calif., and Tektronix, Inc. in Wilsonville, Ore. The other vendors' terminals are used in other departments of the company, Holt said.



3533 X stations *are built around Intel's I960 RISC-based CPUs*

However, Holt has not had a chance to judge the user-friendly components of the new NCR/Applied Digital line — such as special installation software — that are supposed to allow me to put X stations in the hands of those who are not technically competent." Those features were not included in the alpha-test version, he explained.

"Right now, with anyone's products, you have to be a basic technoid" to use X, he said. He added that NCR/Applied Digital is fixing a monitor problem that produces a "wavy effect."

NCR/Applied Digital'a new line replaces a family of monochrome X displays based on the Motorola, Inc. 68020 chip and color displays running on both the 68020 and Texas Instruments, Inc.'s 34020 processor. However, the vendor said it will continue to service the old line for seven years.

Into the mainstream

Generally, diskless X stations are stretching beyond the engineering community in firms implementing distributed processing that are seeking ways to give users access to multiple computing environments.

Commercial sites considering investments in X terminals are often seeking user-friendly, security-oriented setups that cost less than workstations but have stronger graphics capabilities than personal computers.

Last month, for example, Federal Express Corp. signed a deal worth up to $15 million with 41% market share player Network Computing Devices for X terminals to manage corporate operations.

The firm chose X terminals rather than investing in a workstation or PC for every desktop because "we're trying to achieve windowing and graphics, not a full operating system running applications," said Dennis H. Jones, senior vice president of the company's information and telecommunications division.

According to a survey of 141 X user sites reported in *Reliability Ratings*, a Boston-based research report, 17% bought X terminals for their price/cost-effectiveness over other platforms. However, more than 23% of the respondents said they are using X terminals today for programming, while just 4% said they are using them for general business, according to the study, which was published last month.

IN BRIEF

New Remote2 from DCA

■ **Digital Communications Associates, Inc.** in Alpharetta, Ga., has announced a new version of its Remote2 asynchronous remote control communications software. The new release adds Lotus Development Corp./Intel Corp./Microsoft Corp. extended memory support.

Other enhancements include new security features for the host personal computer and reduced conventional random-access memory requirements in the host PC.

■ Long-distance carriers **WilTel, Sprint Corp.** and **CompuServe, Inc.** have announced that Dowty Communications' Frame Relay Access Device has met tests for compliance with their frame-relay services. **Northern Telecom, Inc.** also announced that its frame-relay switches are compliant with Dowty devices.

■ **Beame & Whiteside Software Ltd.** has developed what is said to be the industry's smallest Simple Network Management Protocol kernel. The kernel, which is said to consume less than 2K bytes of workstation memory, will be integrated into Version 3.0 of BW-TCP and BW-NFS Transmission Control Protocol/Internet Protocol client software for DOS and Microsoft's Windows.

The software is said to be fully compliant with the Management Information Base II version of the network management standard.

■ **Telepartner International, Inc.** in Farmington, Conn., said it is now shipping Packet/3270 for Windows, a Windows 3270 emulator for portable and stand-alone PCs dialing into Systems Network Architecture mainframes.

■ **Pacific Bell** recently announced plans to replace older telecommunications switching systems throughout California's North Coast region with digital technology based on Northern Telecom DMS 100 switches.

NEW PRODUCTS

WAN software

AT&T has introduced Definity High Speed Link, a data module.

The product provides dial-up access to data communicatioos services operating at speeds of 56K and 64K bit/sec., the company reported.

A link is provided between any AT&T digital private branch exchange and high-speed data network services such as the company's Accunet Switched Digital Services and Software Defined Data Network services.

Definity High Speed Link allows users to use existing T.1.5 facilities for dial-up transmissioo and offers advanced capabilities such as built-in remote maintenance.

The unit costs $2,200.

AT&T
Room 23A25
55 Corporate Drive
Bridgewater, N.J. 08807
(908) 658-2604

Gateways, bridges, routers

Wall Data, Inc. has started shipping Rumba for NetWare.

According to the company, the product is the only Microsoft Corp. Windows workstation connectivity solution designed to operate simultaneously under Novell, Inc.'s NetWare for SAA, NetWare SNA Gateway and Transmission Control Protocol/Internet Protocol (TCP/IP) environments.

Without having to opgrade their Novell networks or replace their NetWare SNA Gateways, Windows users can access mainframe data.

Support for TN 3270 communications via TCP/IP and Rumba remote is provided, offering PC-to-host connectivity for laptops and other personal computers for which dial-up communications are necessary.

License fees begin at $395.

Wall Data
17769 Northeast 78th Place
Redmond, Wash. 98052
(206) 883-4777

Micom Communications Corp. has introduced an internal remote local-area network bridge optioo for the Micom Marathoo Data/Voice Network Server.

According to the company, the bridge option eliminates the need for an external Ethernet bridge when sending data and voice to remote locations.

The option was designed for Marathon 1K and 5K and offers the functions of an 802.3 Ethernet LAN bridge oo a single module, the company said.

Plogging directly into Marathon, the option can run on any Ethernet protocol and permits users to integrate voice, data and fax with local- and wide-area network traffic over a low-speed leased line.

The LAN bridge option costs $1,750.

Micom Communications
4100 Los Angeles Ave.
Simi Valley, Calif. 93063
(805) 583-8600

X Window System

Quality Software Products Co. has ported Masterplan 1.1X, a CRT project management program, to the X Window System as a Motif-compliant application.

Up to 9,999 activities can be handled by Masterplan, which uses a four-screen approach that allows users to track all project phases.

Masterplan has a resource screen that monitors resources and a calendar screen that displays a project calendar. Masterplan's network screen is a graphical way to see past and present activities.

The product is available for Unix workstations running X Version 11 Release 3 or later or Unix host computers connected to X client workstations for terminals.

Licenses start at $695.

Quality Software Products
5711 West Slauson Ave.
Culver City, Calif. 90230
(310) 410-0303

Links

Madge Networks, Inc. has introduced the Smart 16/4 MC32 Ringnode, a Token Ring adapter card.

The Smart 16/4 MC32 Ringnode gives users full 32-bit functionality and bandwidth of Micro Channel, and it has been optimized for the IBM Personal System/2 Model 95XP 486 server.

According to the company, the product is the first adapter card to support Micro Channel's bus-master streaming data mode.

The card is optimized to provide throughput in gateways, servers and critical network stations and supports shielded twisted-pair, unshielded twisted-pair and remote booting, the company said.

The Smart 16/4 MC32 Ringnode costs $1,295 or $1,195 for a five-pack quantity.

Madge Networks
42 Airport Pkwy.
San Jose, Calif. 95110
(408) 441-1300



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Rdb tool promises better performance

DBTune customizes design based on actual use

BY MELINDA-CAROL BALLOU
CW STAFF

RICHMOND, Va. — Information Systems Group, Inc. plans to begin shipping Version 2.0 of DBTune next month. The tool for Digital Equipment Corp.'s Rdb relational database management system improves database performance by using workload, volume and environment information to create a physical database design tailored to actual database use, officials said.

The new version of the product incorporates dynamic transaction analysis, which generates optimized Rdb designs.

"Version 2.0 is geared toward getting tuning and productivity results with as little effort from the database administrator as possible," said Tom Bandy, company president. "They can also now control tuning at the component levels of the Rdb database."

Suitable bridge

Information Systems Group and Compu-Design USA worked together to produce a bridge between DBTune and Compu-Design's RPM/V, a tool that detects and profiles application performance. The use of this bridge allows DBTune to make its design decisions based on the more complete information available from RPM/V, company officials said.

"The RPM tool monitors the activity of the database, and we then include that data with our performance analysis," Bandy said.

"It gives the [database administrator] complete control over tuning the database by going in and doing analysis — and it does the work for you. You just punch a key and let it rip," said John Byerly, vice president of MIS at Clinical Reference Laboratory, Inc., a testing laboratory in Kansas City, Kan., that uses a range of Rdb databases for pharmaceutical and blood testing.

The lab, which has seven databases, experienced a 15% to 55% performance gain after using DBTune, depending on how the database was tuned and optimized, Byerly said.

"The dynamic transaction analysis with this new version will let DBTune go out, analyze your database, make suggestions, tune the database, figure out its depth and set up indices for you," Byerly said. "Whenever you use it on a database that's new and has never been tuned, the performance results are tremendous. I haven't had to hire a [database administrator], which has been a tremendous saving."

Version 2.0 of DBTune and the bridge to RPM/V are due to ship Oct. 1. Prices for DBTune range from $4,975 to $9,945, based on the number of users. The bridge is $2,000.

Management by comparison

Data center managers try metric services to measure their efficiency

BY JOHANNA AMBROSIO
CW STAFF

Mom may have told you not to compare yourself with others, but information systems executives have found it a helpful method for pinpointing the inefficiencies in their data center operations.

The two primary vendors of services that compare like-size data centers are Compass America, Inc. and Real Decisions Corp.

Although their approaches differ somewhat, both vendors use metrics to measure various aspects of the data center, including personnel, systems efficiency and what is spent on equipment.

One recent Compass customer was Champion International in Hamilton, Ohio, which undertook a comparative study in January. "Altogether, we identified savings that represent about 3% of the total IS budget," said Tom Walsh, director of MIS network services. "The study more than paid for itself."

Although Champion had 21% fewer IS staffers than even the top-performing companies in the Compass database, the study identified four positions that could be eliminated, Walsh said. Another pinpointed area involved accessing information online instead of printing everything out.

Walsh said another benefit was less bottom-line oriented. "It validated that we are performing well compared to other world-class organizations. That has a positive effect on morale, and that's important because for the past five years, we've been asking people to do a lot."

Another Compass customer is Johns Hopkins Health System in Baltimore. Although that study has not quite paid for itself in real bottom-line benefits yet, service has improved, said Jake Jacobstein, director of operations and technical support.

"We've implemented a few of the recommendations, including some hints about how to make non-IBM printers perform well on an IBM network," he said. "It was a real eye-opener for us."

One of the major differences between Compass and Real Decisions is the basis of comparison they use for the data center being studied. Whereas Real Decisions compares it with similar-size data centers in the same industry category in the U.S., Compass uses a database that contains the Top 10 performing data centers worldwide that are similar in size to the data center being studied. These Top 10 performers are garnered from different industries.

Another major difference is that Real Decisions focuses on chargeback costs — that is, what the data center should be charging for its services — while Compass analyzes the unit costs of many different data center categories.

The unit costs are absolute costs divided by quantities of service provided. Unit costs vary depending on how much work is being processed at any given time.

The Real Decisions study is less detailed and less expensive than the Compass version. On the other hand, the Compass service requires far more work on behalf of the user to collect and categorize the data that Compass then analyzes.

Some of the data collection — up to 900 pieces of it, depending on the installation — is done with proprietary Compass software that resides on the mainframe and scans logs and other software. But some of the data

Continued on page 70

What the metrics mavens do

The two major data center metrics services are Real Decisions in Darien, Conn., and Compass America in Herndon, Va. Both measure various aspects of data center operations to determine what they cost or how they should be charged back, and how efficient they are compared with data centers of similar size.

How they differ

Compass' evaluation is more in depth than Real Decisions', users said, and thus costs more: $28,000 to $100,000, vs. Real Decisions' $25,000 to $45,000.

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HP users unhappy with MPE patches

BY MARK HALPER
CW STAFF

While many users of Hewlett-Packard Co.'s HP 3000 minicomputer remain loyal to the machine's MPE proprietary operating system and anxiously await the Unix hooks HP has promised, they do have a beef with MPE patch procedures.

Users complain that patching MPE requires too much downtime for the computer and the network, and that HP issues patches that often introduce new problems while correcting existing ones.

The downtime problem is most severe when users install a whole new operating system, users said.

"It can take three hours, and that's being kind," said Guy Smith, HP 3000 systems manager at Circuit City Stores, Inc. The Richmond, Va.-based electronics retailer operates five HP 3000s.

"Most of HP's customers have such real-time requirements that having to shut down for an hour in this day and age of automation can be big bucks," noted Steve Cole, manager of HP Technical Service at Northern Telecom, Inc. in Research Triangle Park, N.C.

When the user has to patch MPE's optional Network Services module, that means bringing down the network, which most users would rather avoid.

"You live by the networking sword and you die by it," Smith noted. Circuit City networks its 3000s through 250 sites around the country.

Further complicating Network Services patches is the complexity of Network Services itself, Smith noted.

"I would be hard-pressed to train my third-shift operators on how to do an NS patch," Smith said. He noted that while the company tends to implement NS changes overnight when traffic is slow, it has to bring in specialists during off hours.

Cole added that problems patching MPE go beyond downtime.

"The biggest problem is when you receive a patch, you don't just receive one. Applying a patch to fix a specific problem may affect as many as 30 or 40 other modules, and that can create a problem," Cole said.

Cole and Smith said they and other users have voiced their concerns to HP, which they said is working on correcting the problem.

HP last week said it has a twofold plan to address users' MPE patch complaints.

Korak Mitra, marketing manager for product planning, said the company plans to release upgrades to MPE less frequently to avoid confusion over which patches relate to which upgrades. The company has typically issued about four modifications per year; it will now release only one or two while planning major updates every 12 to 18 months, he said.

The major release schedule marks a new model for updates, replacing the frequent release of lesser updates. The old model resulted in users mismatching patches with their particular version of MPE, Mitra said.

Mitra also said HP is working on developing patches that are simpler to install and require less downtime.



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Management by comparison

CONTINUED FROM PAGE 67

must be collected manually by IS staffers, and users who have done it say it is almost always more involved and time-consuming than it may first appear.

"We didn't prepare everything exactly on target," Jacobstein admitted. "But we've started collecting some historical data so we'll have it for the next time we do the study," which is planned for February or March. Walsh, who is planning for another study in about a year, said, "The second time should be a lot simpler."

Compass has about 300 customers; Real Decisions has about 250. Some clients use both services — Real Decisions to get an efficiency ranking within their industry and Compass to find out where they stand worldwide. A few years back, Ralston-Purina Co. used both to revamp its IS operations.

Some computer vendors and consulting organizations offer these services, but not all metrics mavens are created equal. "IBM came in about a year ago to do this kind of study," Walsh said. "They had some knowledgeable people, but they weren't able to come up with implementable ideas. They just told me what I was doing, and I already knew that."

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IN BRIEF

Covia signs with Fujitsu-ICL

■ **Covia Corp.**, the marketer and developer of the Apollo computer airlines reservation system, has signed a $17 million contract with **Fujitsu-ICL Systems, Inc.** to purchase 5,000 of Fujitsu-ICL's Automated Ticket and Boarding Pass Printers during a three-year period. A possible two-year extension for additional printers could potentially expand the value of the contract to $50 million.

■ **Digital Equipment Corp.** is winning accolades from the Profit Oriented Systems Planning Program (POSPP), an organization of information technology executives from large companies, for bringing personal computer-style pricing to the midrange market and "breaking the link between hardware and software," POSPP officials said.

DEC will be the first member of POSPP's newly established Vendor Honor Roll. It is being recognized for shifting its licensing practices last October to offer personal-use licensing and concurrent-use licensing options in response to user complaints.

■ **NCR Corp.** and **Independence Technologies, Inc.** have made available NCR's Top End transaction-processing monitor on the HP 9000 computing system. The port will be available worldwide later this month.

■ **Independent Computer Consulting Services, Inc.** in Columbus, Ohio, is integrating its accounting and distribution applications with Cincom Systems, Inc.'s Supra database management system and Mantis fourth-generation language.

Unify to support Tuxedo TP, Windows

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — Unify Corp. is pushing its Accell/SQL database-independent tool kit for Unix relational databases into a broader client/server user base.

The $40 million firm announced it will support AT&T's Tuxedo transaction manager to reach networked database servers and Microsoft Corp.'s Windows to reach more desktop users. At the same time, it announced a marketing relationship with the British firm ICL PLC, which will resell the Accell/SQL 2.0 tool kit worldwide as ICL's Open Systems 4GL.

Unify's two new products, Accell/TP for transaction-processing applications and Accell/SQL for Windows, will go into beta-test sites this fall, said Nico Nierenberg, company president. The Windows version is scheduled to be delivered by February, while the Tuxedo-compatible transaction-processing monitor is due to ship in April. Pricing was not announced.

The Accell/SQL for Windows applications will run against relational database management system servers from Oracle Corp., Sybase, Inc., Informix Software, Inc., the Ask Co.'s Ingres Corp. and Unify. Users will access those servers from both Windows personal computers and Unix workstations. Accell/TP will work with the same back-end database servers, accessed by character-based terminals or client machines running the Open Software Foundation's Motif or Sun Microsystems, Inc.'s Open Look graphical user interfaces.

> THE PRODUCTS bolster Unify's claims that it can provide independent application tool kits that work with a wide variety of back-end database servers.

Industry analysts said the products bolster Unify's claims that it can provide independent application tool kits that work with s wide variety of back-end database servers. However, Unify Chief Executive Officer James Hammock noted that 70% of all Accell/SQL users also own the Unify 2000 relational database.

Some analysts question Unify's ability to sell into other database vendors' installed bases two years after moving to a tools strategy. "Their product direction seems relatively sound," said Darlene Brown, a software analyst at Gartner Group, Inc. in Stamford, Conn., "but they're still trying to move away from being s database company."

NEW PRODUCTS

Unix

Alliance Technologies, Inc. has introduced TextMachine, a Unix, full-text, distributed, textual database product.

According to the company, the product is a suite of tools designed for client/server architectures. Users can construct systems to prepare, load, access, collect, monitor and manage distributed databases.

TextMachine offers s variety of capabilities such as searching for text sttributes when the exact text is unknown, performing user-transparent global searches across multiple platforms and browsing through documents based on a user-defined document structure.

TextMachine prices range from $50,000 to $300,000.

Alliance Technologies
Suite 250
Shepard Mountain Plaza
6034 West Courtyard Drive
Austin, Texas 78730
(512) 794-9856

Data storage

Contemporary Cybernetics Group has introduced the CY-2000, s magneto-optical disk drive.

The product stores 1G byte on s single disk and is fully compatible with all NCR Corp. computer systems. CY-2000 can be used for multimedia and digital video, desktop publishing and computer-aided design and manufacturing.

The CY-2000 fits into most environments because its dimensions and mounting provisions are identical to standard 5¼-in. floppy disk drives. The optical discs can be erased and rewritten continuously without loss of reliability, the company reported.

Prices start st $3,500.

Contemporary Cybernetics
Rock Landing Corporate Center
11846 Rock Landing
Newport News, Va. 23606
(804) 873-9000

Database management

Object Design, Inc. has introduced ObjectStore, an object-oriented database management system.

Object technology serves as a solution for working with complex information such as images, video, sound and complex documents. ObjectStore was designed for NCR Corp.'s NCR System 3000, and according to the company, is the only object-oriented DBMS available for NCR platforms running the Unix System Version 4 operating system.

Prices start st $11,000.

Object Design
1 New England Executive Park
Burlington, Mass. 01803
(617) 270-9797

Software application packages

Infodata Systems, Inc. has released ShelfSpace, a software solution.

According to the company, ShelfSpace was designed to simplify the process of retrieving, storing and managing corporate policies and procedures, user manuals and technical documentation. Specific words or phrases embedded within the text can be searched for, regardless of their location. A table of contents, chapter and section divisions and cross-referencing features are included.

ShelfSpace on the IBM mainframe costs $75,000. The price will increase to $99,000 in January.

Infodata Systems
#700
5205 Leesburg Pike
Falls Church, Va. 22041
(703) 578-3430

Beacon Software International has released The CICS Connection 2.1, a VSAM file sharing product. Multiple CICS and batch programs can update the same VSAM simultaneously without affecting on-line response time, the company reported. During the daytime, batch jobs can be run while CICS is in use, which eliminates file deallocation problems and end-of-the-month scheduling conflicts. Support is provided for single or multiple CPU's operating in fully distributed local and remote environments.

Prices for s single CPU license range from $15,000 to $45,000.

Beacon Software International
Suite 702
8027 Leesburg Pike
Vienna, VA 22182
(703) 883-9000

Utilities

Kisco Information Systems has introduced Release 2.0 of DSK Manager, s utility designed for the IBM Application System/400.

The product is a disk-management software tool that has utilization analysis programs and disk backup utilities. Data objects can be saved on the AS/400 while they are in use. DSK Manager features master and incremental backup, separate backups for data objects and the capability to back up data files while users are active on the system.

A onetime per-license fee for DSK Manager costs $600.

Kisco Information Systems
120 Beverly Road
Mount Kisco, N.Y. 10549
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Fidelity's development plan leans on JAD and prototyping

BY JEAN S. BOZMAN
CW STAFF

BOSTON — Fidelity Investments has a sprawling information technology infrastructure, with computer processing in Dallas, Cincinnati and Salt Lake City supporting the fund-management firm's 7,500 employees. With an eye to controlling both expense and time, Fidelity — which manages more than $156 billion — is hammering out a single methodology for all new application development.

Fidelity managers are constructing what they see as a comprehensive development methodology, designed to address their three-tiered computing environment (see related story page 74) while responding quickly to changing business needs.

"We have a very complex and diverse environment," said Chief Information Officer Albert Aiello. "Our philosophy has been one of using the appropriate tools for the appropriate application."



Nubar Alexanian

Fidelity's CIO Aiello: *'You try to put the data near your customers, and you try to build in an open architecture'*

The new method, called Fidelity Advanced Systems Environment (FASE) 2000, is built on joint application development (JAD), rapid prototyping and enterprisewide data modeling. It was created 18 months ago, following discussions between Fidelity's senior management and managers from Aiello's information systems group, Fidelity Systems Co. "We believe we can cut the time to deliver new systems in half by 1995 and improve quality at the same time," said George Hathaway, a vice president of software development at Fidelity Systems.

Fidelity, with an information technology budget that ranges from 13% to 15% of annual revenue, wants all development projects to support specific business requirements. This has spurred the use of JAD brainstorming sessions with users. Sometimes, less formal discussions between developers and users fit the bill, extending across many business units. The intense discussions lead to on-screen prototyping of personal computer-based applications.

"We are a company made up of many companies," Hathaway explained, "so getting cross-Fidelity teamwork is critical to our success."

The FASE 2000 method is platform-independent, so it can be used to create mainframe, minicomputer or PC applications. To ensure data consistency across Fidelity systems, a common data model was built with the Brown-

Continued on page 74

ON SITE

Fidelity Investments' Fidelity Systems Co.
Boston, Mass.

- **Challenge:** To speed product completion at the investment firm and to maintain data integrity among multiple databases on IBM, Digital Equipment Corp. and Stratus Computer, Inc. systems.
- **Strategy:** Define a standard approach to software development to boost programmer productivity, using integrated CASE techniques, joint application development and prototyping. Standardize on product sets and use a common data repository to ensure timely and accurate data.
- **Results:** A standard software method, called FASE 2000, with the first client/server application scheduled for delivery to 500 desktop users this fall. FAMIS, a client/server system based on Microsoft Corp. Excel and Sybase, Inc. SQLServer.

Conference woos developers with PC-oriented tools

BY GARRY RAY
CW STAFF

BOSTON — Efforts to move systems development to personal computers, including applications for non-PC platforms, took center stage at last week's Software Development '92 Fall conference and exhibition.

Aimed primarily at PC-based developers and development managers, this year's conference was the forum for a number of new and updated product announcements. These included the following:

Atriom, Inc. in Waltham, Mass., unveiled Atriom/Browse and Atriom/Build, a pair of tools that aid in understanding, building and modifying object-oriented C++ programs.

The $395 Atriom/Browse analyzes C++ source-code files to build a version-controlled repository of information, including the objects, classes, methods and files in a program, according to Atriom President Mike Ackroyd.

Atriom/Build, priced at $795, is a superset of Atriom/Browse. It allows program designers to create and modify object models through a set of Microsoft Corp. Windows-based graphical tools. Atriom/Build also generates C++ source code from those object models.

Available for Windows this fall and later for Sun Microsystems, Inc. workstations, the Atriom tools will be distributed by Semaphore in North Andover, Mass., Atriom officials said.

AD/Cycle product

IBM demonstrated SAA AD/Cycle PL/1 Package/2, an OS/2 2.0 implementation of the PL/1 programming language.

Designed to work with the Language Environment component of AD/Cycle — which provides a common programming interface, runtime support and various services for all compliant languages — the $2,750 compiler can be used to develop or maintain PL/1 applications for use with IBM's MVS, VM/CMS, OS/400 or OS/2 operating systems.

According to Bob Thimsen, the OS/2 deliverables manager at IBM's San Jose, Calif., Santa Theresa facility, the new PL/1 "will enable customers to compile and run programs on local workstations and to unload their host systems."

IBM also announced that it will begin beta-testing its C++ compiler, called the IBM Enhanced C Compiler.

Sextant for C, from **Sextant, Inc.** in Ann Arbor, Mich., is a $2,000 reverse-engineering and development tool for C programs. It provides multiple windows for program decomposition, display of call graphs and cross-references of files, functions and various data types. All components are stored in a proprietary repository.

Sextant also includes a programmable text editor and provides an integrated environment that supports a variety of debuggers and compilers. The Unix-based tool supports the Open Software Foundation's Motif graphical interface and runs on a number of Unix workstations.

Hatboro, Pa.-based **Innovative Data Concepts** announced an addition to its Tesseract CXL (TCXL) User Interface Development System for Unix, DOS, Windows and OS/2. Called TCXL/Windows, the $69 library lets developers convert TCXL-DOS programs to the Windows environment with no modification, according to the company.

Watcom International Corp., based in Waterloo, Ontario, announced that it has begun beta-testing programs for its new C and Fortran compilers for Microsoft Windows New Technology. The company expects to ship both compilers during the first quarter of 1993, said Dave Boswell, Watcom's vice president of sales and marketing.

Additionally, the company showed a Windows version of Watcom SQL, a set of client/server database and development tools currently available for MS-DOS.

Software Productivity Research, Inc. in Burlington, Mass., announced a Unix version of its Checkpoint software estimation, measurement and assessment tool.

Like the currently available version for MS-DOS, the Unix version also performs "what-if" analyses of software project costs. Pricing has not yet been established, a company spokeswoman said.

IN BRIEF

CASE tool wins award

■ **Interactive Development Environments, Inc.** has won the Open Desktop Product of the Year award from The Santa Cruz Operation (SCO). The San Francisco-based developer of Software through Pictures, which is an integrated computer-aided software engineering product designed for the SCO Open Desktop environment, won in the software development tools category.

■ **Bull HN Information Systems, Inc.** in Billerica, Mass., and **Unidata, Inc.** in Denver will jointly sell Unidata's UniData relational database management system and application development system for the Bull DPX/20 reduced instruction set computing Unix platform.

Fidelity's new plan leans on JAD

CONTINUED FROM PAGE 73

stone Solutions, Inc. computer-aided software engineering repository tool. Data from multiple systems can be imported to a single data source, thus eliminating data errors caused by transfer of data between computer systems.

The first tangible product of FASE 2000 is a client/server accounting application called FAMIS, for the Financial And Management Information System. Scheduled to be available to-end users next month, the FAMIS application took just six months to develop — far less than standard 12- to 18-month development cycles, IS managers said. The same method is being used in more than 10 other programming projects.

FAMIS will allow end users to see "views" of financial data that was extracted from Fidelity's six mainframes and sent to a Digital Equipment Corp. VAX 4000 database server. The "client" part of the FAMIS application will run on 500 AST Research, Inc. PCs. The "server" part will run on a Sybase, Inc. SQL Server relational database management system and will be displayed with Microsoft Corp.'s Excel spreadsheet under Windows.

Programming, no matter how structured, will not ensure data consistency, however. For that reason, FAMIS draws on data that has been certified as correct by data specialists in business units, said Bert Alexander, Fidelity Systems' technical adviser for data management. "Network technology allows you to get data relatively easily, but you're not maintaining that data yourself," Alexander said. "That's why we have to instill this pride of ownership of data in each business unit."

Now that FAMIS is complete, Fidelity expects to be able to reuse some of its code in future applications. But while the shapes of those programs are not clear, the guidelines for FASE 2000 development are: "You try to put the data near your customers," Aiello said, "and you try to build in an open architecture."

Fidelity's IS philosophy

The FAMIS client/server application is a sure sign of architectural synthesis at Fidelity. The firm has 6 IBM-compatible mainframes, 6 IBM Application System/400s, 3 IBM System/38 minicomputers, 23 Digital Equipment Corp. VAX systems and 11 Stratus Computer, Inc. machines.

Fidelity desktops are covered with thousands of workstations, including 350 Sun Microsystems, Inc. workstations, 150 DEC workstations and 3,900 PCs.

Despite its absorption of new technology, Fidelity has no near-term plans to cart away its mainframes. The mainframes will remain the source of all fund-management transaction data for the next decade, Fidelity CIO Albert Aiello said.

"Systems are built over time," he noted. "They're like the rings of a tree: They just keep growing, and over time you go back and you re-evaluate, and you might decide to chop some of them down."

In a move toward client/server systems, a growing array of relational database servers is bringing decision-support data right into the business units — and onto users' PC screens.

"The biggest problem in distributed architecture is performance and reponse time," said Aiello, who is also president of Fidelity Systems, Fidelity Investments' information technology subsidiary. "What we do is populate some [of the mainframe] data on the server, and it makes for better response times."

A team of technical specialists evaluates new technology, ranging from desktop PC and workstation "clients" to Unix parallel processor database "servers." But Fidelity does not jump at every new product — or change applications without cause. "We don't need to be No. 1 or No. 2 to use a new technology," Aiello said. "We could be No. 100 and still be way ahead of the world at large."

JEAN S. BOZMAN



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NEW PRODUCTS

Compilers

CenterLine Software, Inc. has introduced the CenterLine-C ANSI optimizing C compiler.

The product was designed for Sun Microsystems, Inc. Scalable Processor Architecture workstations running Solaris 1.0 or 2.0. Portability of C programs across heterogeneous platforms is gained via CenterLine C's ANSI compliance. The product offers compliance with the Kernighan & Ritchie C language syntax and can compile a C program in K&R and ANSI mixed mode. Compatibility is also provided with the Sun C language syntax and Sun make files.

Prices start at $495.

CenterLine Software
10 Fawcett St.
Cambridge, Mass. 02138
(617) 498-3000

Application development tools

Oasys, Inc. has introduced Oasys Native SPARC tools, a software development solution designed for Sun Microsystems Inc.'s Scalable Processor Architecture.

The tools have been integrated with Sun's native assembler/linker and include Version 1.86 of the company's Green Hills compilers and the multilanguage, X Window System-based Multi debugger. The compilers support four, intercallable high-level languages. Multi is the only debugger that allows users to simultaneously debug software applications written in C, C++, Fortran and Pascal as well as assembly code, the company reported.

Stand-alone prices for the Oasys C Compiler start at $900.

Oasys
1 Cranberry Hill
Lexington, Mass. 02173
(617) 862-2002

Clark Development Co. has introduced the PCBoard Door Developer's Toolkit.

The tool kit provides users with a library for building Doors for the PCBoard bulletin board system software environment, the company reported. The product offers a number of features such as I/O functions with automatic error handling, string and manipulation functions and a single function call to initialize the door, read the configuration files and set up the communication port. The tool kit is compatible with networks that adhere to Netbios standard calls and supports versions of C and C++ products from Microsoft Corp. and Borland International, Inc.

The PCBoard Door Developer's Toolkit costs $180.

Clark Development
Suite 303
3950 South 700 East
Murray, Utah 84107
(801) 261-1686

NeuralWare, Inc. has introduced DataSculptor, a Microsoft Corp. Windows-based data transformation tool.

The product was designed to reduce the amount of time required to preprocess and analyze data for neural network application development, the company reported. File formats can be read by DataSculptor off of a variety of spreadsheets and databases including DB2, Oracle, Excel and ASCII files. The product runs on IBM personal computers and compatibles with Windows 3.0 or above.

The introductory price for DataSculptor is $495.

NeuralWare
Building IV
Penn Center West
Pittsburgh, Pa. 15276
(412) 787-8222

Dr. Taylor's Software, Inc. has introduced Dr. Taylor's Test and Dr. Taylor's Big Test software utilities.

According to the company, Dr. Taylor's Test automates the testing of Microsoft Corp. personal computer DOS software. Most programming languages can be used with Dr. Taylor's test including C, Basic, assembler, Cobol, dBase, FoxPro and Paradox. A PC acting as an ASCII terminal enables Dr. Taylor's Big Test to test Unix, VMS, mainframe and minicomputers. DOS 3.1 or higher is needed for both products, and Dr. Taylor's Big Test requires an ASCII terminal emulation program.

Dr. Taylor's Test costs $199, and Dr. Taylor's Big Test costs $499.

Dr. Taylor's Software
Pinnacle Meadows
Richford, Vt. 05476
(802) 848-7731

Code libraries

Andsor Research, Inc. has released Version 1.0 of the Andsor Database Engine, a Microsoft Corp. Windows-based add-on library.

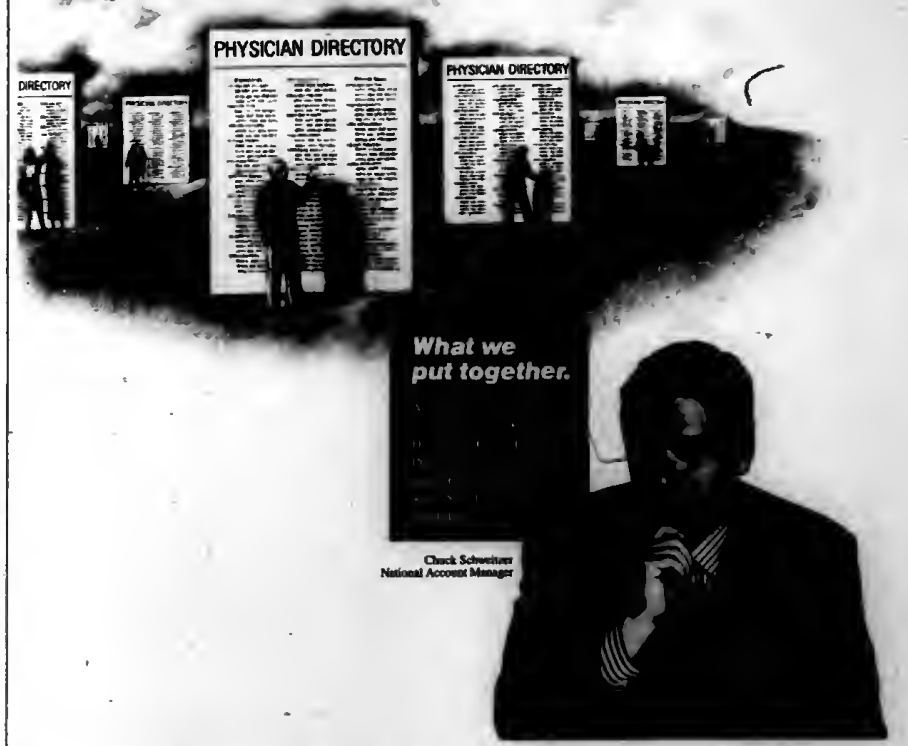
According to the company, the product enables users to add advanced database management capabilities to any program through Dynamic Link Library function calls. Sections of an application such as queries and updating operations can be replaced with procedures written in an optimized database language called ADL.

The Andsor Database Engine costs $149.

Andsor Research
Suite 2000
390 Bay St.
Toronto, Ontario
M5H 2Y2 Canada
(416) 245-8073

XEROX

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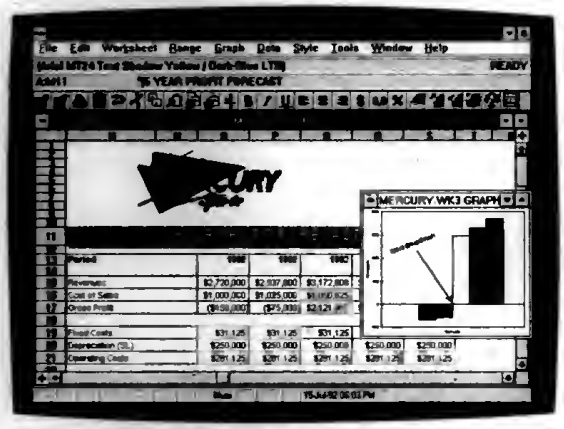
It's a service their customers especially appreciate. And the company appreciates how the 4850 is the most cost-effective way to add color to variable data without incurring the prohibitive costs of offset printing. Not to mention the savings they enjoy by eliminating preprinted stock, reducing warehousing costs, and improving turnaround time.

If putting together results like this would stand out in your business, call 1-800-TEAM-XRX, ext. 609B.

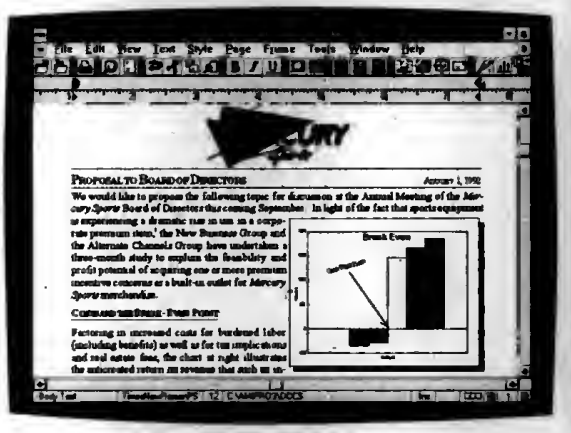
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1-2-3 for Windows Release 1.1, the ideal choice for 1-2-3 for DOS users moving to Windows, now includes SmartPak, a disk which includes over 25 new features and usability enhancements.

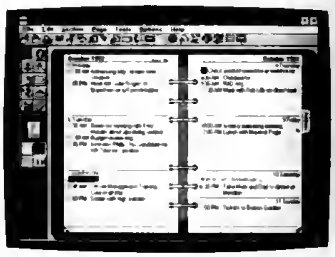


The new Ami Pro 3.0 has been hailed as the best word processor for Windows, with new features that make it more powerful and easier to learn and use than Microsoft Word for Windows.

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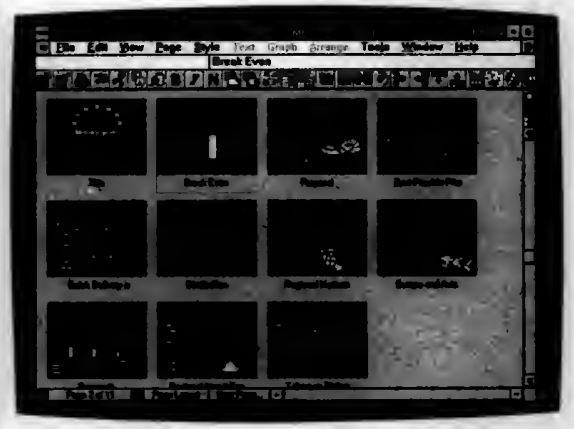


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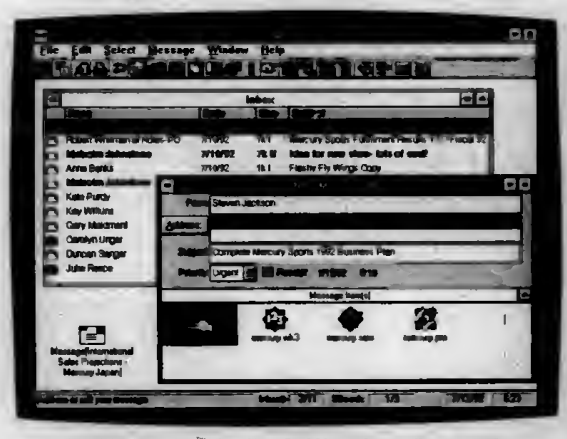
What's more, SmartSuite delivers some truly unique integration capabilities that aren't possible with Office. All four SmartSuite products, for example, share data, text and graphs between each application smoothly and seamlessly. So when an outline produced in Ami Pro is imported to Freelance Graphics, it's automatically converted into a Freelance Graphics outline and full-slide presentation. And a 1-2-3 graph exported to Freelance Graphics will arrive, fully editable. You can even move quickly between

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1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

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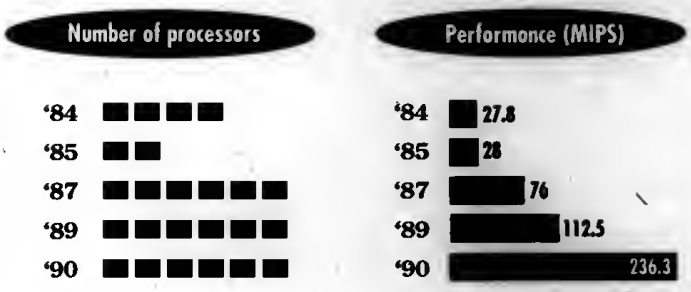
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MAINFRAMES

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. . . while the price increased by just two-thirds in that time frame. (Note that as performance tripled from '87 to '90, the price only doubled.)

All told, you get three times the MIPS for the dollar today, compared to '84.

Source: International Data Corp.

Long, strange trip

[illegible] a new era of the mainframe. Performance and storage are still growing in leaps and bounds, and innovations such as RISC and parallel processing are still being developed. But this year, unlike any other year, mainframes have started selling at a rough average of 30% off list price. Not so long ago, if you even so much as mentioned a discount, you'd lose the chance of getting your standard Volume Purchase Agreement, which entitled you to 10% to 15% off list price. So as the mainframe recruits, it seems like a good time to get an idea of where we are by looking back at where we've been.

BY ALAN RADDING

Hold everything. You've undoubtedly heard about the discounts, possibly even been tempted by the promise of 30%, 40% and even 50% off list prices. And it's true that no matter what your situation, you *can* get an exceptionally low price on a mainframe.

Take the case of Alamo Rent-A-Car, Inc. in Miami. Back when the airline wars were firing up the rental car business, the company's IBM Enterprise System/9000 Model 900 hit 99.5% CPU utilization. Despite being in dire straits for a new machine, Tom Loane, vice president of computer services at Alamo, still got a great price. "I didn't use these exact words, but I let the IBM salesman know in no uncertain terms that if he took advantage of me now, he was dead meat," Loane says.

In a market like that, how can you possibly fail? For one thing, you can pay too much attention to the discount percentages. Any mainframe buyer can walk away with what appears to be a great deal, but some purchasers have found that the 40% discount they worked so hard to get wasn't quite as good as the 25% discount they might have received down the street.

How could this happen? Well, only a portion of the reported discounts — about 20%, according to Jim Cassell, vice president and director of the large computer strategies service at Gartner Group, Inc. in Greenwich, Conn. — are in real hard dollars. The rest come as soft-dollar savings, such as one-year free warranties.

Not that soft-dollar savings don't count; they just have a tendency to hide the value of those supposedly great deals, and there is the chance that you won't be able to cash in on them.

For instance, when Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., spent $800,000 to upgrade from an IBM 4381 to an ES/9000 Model 210, IBM threw in $100,000 worth of credit toward services.

"When we tried to use the credits, we found a lot of limitations. Or they were charging twice the price for the services to begin with," says Michael Baker, computer center manager. Next time around, he says, he'll insist on a "real" discount, even if it seems like less.

Soft-dollar savings can work

Continued on page 82

Radding is a free-lance writer based in Newton, Mass.

Mainframes: The next 10 years

BY SUSAN GANNON
and FRANK GENS

It promises to be an interesting decade for the mainframe. In the next five years, IBM will unveil a low-cost computing platform and start delivering its much-discussed System Complex, or "Sysplex," model. By the late '90s, we'll see massively parallel systems from most mainframe vendors that will lower the costs of high-performance computing forever. Here's a look at what IBM and the plug-compatible vendors have in store for the next 10 years.

Third-quarter '92

Amdahl Corp. ships first eight-way processor, the 8650M. At this point in the game, eight-way processors are the best solution for high power. But bigger processors won't undo the high costs of mainframe computing. The eventual answer is parallelism, which will come later.

Gannon is a senior analyst at Technology Investment Strategies Corp. in Framingham, Mass. Gens is vice president of technology assessment at the firm.

March/April 1993

IBM and Hitachi Data Systems Corp. announce eight-way processors. IBM answers Amdahl with its own eight-way processor, an enhanced 9021 with a 12% to 15% price/performance improvement. This new series will be upgradable from the Summit model as well as the J technology machines, but at a higher price tag than the Summit models.

1993-1994

IBM dabbles with parallel processing via Sysplex. With a parallel system, multiple processors are linked together to act as a single system, offering price/performance that can compete with reduced instruction set computing (RISC)-based servers and networked personal computers. Parallelism can have many definitions, but the end result is the linking of multiple microprocessors to act as a single system to an end user and an application.

IBM's first shot at parallelism in the mainframe world is through its Sysplex architecture, to which IBM will add high-speed interconnect and parallel server versions of CICS and DB2 in the next two to three years. The resulting 390 clusters will deliver performance in the billions of instructions per second (BIPS) range.

Microprocessor-based mainframes deliver more competitive cost per million instructions per second (MIPS). While this will answer the demand for high performance, IBM will also need to address the low-cost price/performance arena.

Here, the company will offer tightly coupled versions of its System/390-based CMOS technology that resides in today's 9221s. These micro-based systems — which are expected to become available in the next 12 to 24 months — will eventually be available in up to 16-way configurations.

By themselves, these micro-based 390 mainframes will not address the high-performance market because their performance will still fall below that of their big brothers based on traditional, bipolar, multichip processors. But they will address the desperate need of the 390 architecture to offer more competitive price/performance.

To address the growing challenge from microprocessor-based parallel systems, IBM will have to offer high-performance and low-cost MIPS. Thus, we believe the future of the 390 line will be in using the combination of CMOS micro-based 390 models in large Sysplex configurations.

Late 1993

IBM hedges its bet with a RISC-based parallel large system. Although IBM claims that the above strategy can meet the performance and the price/performance of RISC-based parallel systems, it appears that the company is beginning to hedge its bet with a second large-system architecture.

Mainframes shipped in the past year

Vendor	Number of CPUs	Memory range (bytes)	Cache capacity (bytes)	Number of channels/ channel speed	Performance (MIPS)	Supports	Operating system	Escon compatibility	Monthly maintenance fee for processor	Base price
Amdahl Corp. (408) 746-6000 5995-8650M, 5995-6650M	8, 6	512M-2G	256K per CPU	128-512/Up to 17M byte/sec.	357, 280	Ethernet, Token Ring	MVS, VM, TPF, UTS	4Q '92	$45,343, $36,274	$30,089,431 (8650M), $24,071,544 (6650M) includes 512M bytes main storage, 128 channels
5995-4550M, 5995-3550M	4, 3	256M-1G	256K per CPU	128-256/Up to 17M byte/sec.	204, 157	Ethernet, Token Ring	MVS, VM, TPF, UTS	4Q '92	$25,573, $21,624	$17,500,625 (4550), $14,200,701 (3550) includes 256M bytes main storage, 128 channels
Bull HN Information Systems, Inc. (508) 294-6000 DPS 9000/52, DPS 9000/42, DPS 9000/32	2	64M-512M	128K	48/4.5M byte/sec.	NP	Ethernet, Token Ring, SNA, Bull, DSA	Bull GCOS 8	1994	$2,013-$4,025, depending on model	$2,392,000 (DPS 9000/52), $1,794,000 (DPS 9000/42), $1,196,000 (DPS 9000/32) includes two CPUs, 64M bytes main memory
DPS 9000/51, DPS 9000/41, DPS 9000/31	1	64M-512M	64K	24/4.5M byte/sec.	NP	Ethernet, Token Ring, SNA, Bull, DSA	Bull GCOS 8	1994	$963-$2,118, depending on model	$1,258,400 (DPS 9000/51), $920,400 (DPS 9000/41), $572,000 (DPS 9000/31) includes one CPU, 64M bytes main memory
DPS 9000/21	1	32M-512M	64K	24/4.5M byte/sec	NP	Ethernet, SNA, Bull, DSA	Bull GCOS 8	1994	$438	$250,000 includes one CPU, 32M bytes main memory
Control Data Systems, Inc. (612) 482-4207 Cyber 970-11, 970-31, 970-32	1-2	128M, 256M, 512M	32K	40/Up to 25M byte/sec.	10.4 (970-11), 17.3 (970-31), 34.6 (970-32)	Ethernet, X.25	NOS/VE, NOS	No	$1,925-$4,671, depending on model	$1,650,500 (970-32), $1,032,000 (970-31), $888,000 (970-11) includes 128M bytes DRAM
972-11, 972-31, 972-32	1-2	128M, 256M, 512M	32K	40/Up to 25M byte/sec	10.4 (972-11), 17.3 (972-31), 34.6 (972-32)	Ethernet, X.25	NOS/VE	No	$1,816-$4,501, depending on model	$1,600,500 (972-32), $982,000 (972-31), $832,000 (972-11)
Digital Equipment Corp. (508) 264-5670 VAX 10000 family	1-4	256M-512M	10K per CPU, 4M on-board processor	1-4/up to 400M byte/sec.	35-125 VUPS	Ethernet, TCP/IP, DECnet	OpenVMS	No	Included in system price	$597,000-$1,400,000
Hitachi Data Systems Corp. (408) 970-1000 GX8310, GX8210, GX8110	1-3	128M-6G	None	128 maximum/Up to 17M byte/sec.	NP	SNA	MVS, VM	Yes	$8,135-$17,306, depending on model	$11,324,000 (GX8310), $7,818,000 (GX8210), $5,062,000 (GX8110)

NP=Information not provided by the vendor



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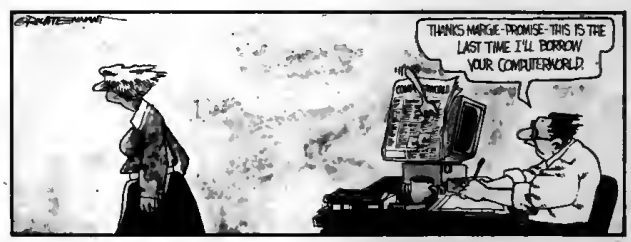
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31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Mgt.
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Last February, IBM announced the formation of a supercomputing development center in Kingston, N.Y., under its mainframe development organization. This organization is tasked with developing highly parallel systems based on the RISC System/6000's RISC-based Power microprocessor.

The first models of what is called the Starburst family are expected to be delivered by late 1993 and will be truly parallel.

Mid- to late 1990s

Starburst moves quickly into mainstream commercial processing. IBM is initially aiming Starburst at technical supercomputing, but it is clear that its technology and design also address commercial concerns such as on-line transaction processing and decision support, high performance and costs that are competitive with distributed systems.

Within 24 months of its introduction, IBM is expected to target Starburst as a high-performance database machine (perhaps fitting into a Sysplex), supporting a broad range of commercial computing environments.

By the end of the decade, Starburst will become the successor to the 370/390 architecture.

End of the decade

RISC-based multimicro servers make traditional mainframes obsolete. While 390 microprocessor-based mainframes will stretch to hit the $10,000 per MIPS level by mid-decade, RISC-based large-scale servers such as Starburst will be much cheaper. In terms of performance, RISC microprocessors are competitive with and appear poised to pass the performance of 390 mainframe engines.

It is not just coincidence that almost every large-system supplier has begun developing a next-generation system based on just such a multimicroprocessor (mostly RISC) design.

Mainframe vendors aligning themselves with RISC include: Amdahl with **Sun Microsystems, Inc.**'s Scalable Processor Architecture (SPARC); HDS with **Hewlett-Packard Co.**'s Precision Architecture-RISC; **Bull HN Information Systems, Inc.** with IBM's Power; **Fujitsu Ltd.** with SPARC and **AT&T/NCR Corp.** with CISC-based **Intel Corp.** microprocessors. •

Shopping for the lease

The rampant discounting and intense competition that marks the mainframe market is mirrored in the leasing industry as these organizations — like the mainframe vendors — vie for a dwindling customer base.

Although **IBM** is increasing its share of the leasing market about 5% to 10% per year, according to industry observers, it's simply taking a bigger share of a smaller pie. Because residual values are falling, leasing is increasingly less attractive, especially with interest rates on conventional loans so low.

What's in it for you? Another opportunity to negotiate.

"You have to shop the leasing," advises Todd Dixon, vice president at Northeast Utilities in Hartford, Conn. "Even ICC will negotiate," he says, referring to **IBM Credit Corp.** (ICC).

Variables to negotiate in leasing contracts include interest rates, estimated residuals and terms.

When Northeast Utilities leased its new mainframe through ICC, it arranged for the disposal of the old mainframe, factoring in the residual value.

And when should you lease rather than buy? A lot depends on how long you plan to use the machine.

"We used to lease, but lately our practice has been to buy," says Marvin Hamann, manager of information systems operators at Land-O-Lakes, Inc., a dairy products producer in Minneapolis.

Now, the company only considers leasing if it doesn't expect to keep the machine for more than two years.

The trick to getting the most from a leasing deal, says William Jackson, director of IS at Aristokraft, Inc., a cabinet manufacturer based in Jasper, Ind., is a short term. Don't go for a lease beyond three years, he advises.

ALAN RADDING

Vendor	Number of CPUs	Memory range (bytes)	Cache capacity (bytes)	Number of channels/ channel speed	Performance (MIPS)	Support	Operating system	Escon compatibility	Monthly maintenance fee for processor	Base price
IBM (800) 426-2468 IBM ES/9000 Model 860	5	9G maximum	None	256/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	$19,315,000
IBM ES/9000 Model 740, 660, 640	2-3	4.6G maximum	None	128/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	$11,610,000 (740), $9,222,000 (660), $8,220,000 (640)
ES/9000 Model 520	1	2.3G maximum	None	64/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	$4,681,000
ES/9000 Model 610, 570, 490	2-4	2G	None	96/17M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	$5,700,000 (610), $4,275,000 (570), $2,920,000 (490)
ES/9000 Model 180	1	512M maximum	None	32/17M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	$462,000
NCR Corp. (513) 445-5000 3600 System	2-8 per node, scalable to 300 nodes	64M-512M per node, scalable to 300 nodes	256K per node, scalable to 300 nodes	8 per node, scalable to 300 nodes/ 100M byte/sec.	40 per CPU	Ethernet, Token Ring, V.35, RS-232, T1, X.25	Unix V, Release 4	2Q '93	$13,000	$3,567,423 includes 384M bytes memory
Tandem Computers, Inc. (408) 285-6000 NonStop Cyclone/ R System	2	64M-2G	1M-8M	2-16/5M byte/sec.	NP	Ethernet, Token Ring	Guardian 90 (Tandem)	No	$661	$279,000 includes two CPUs, 64M bytes memory, 2G bytes disk storage
Unisys Corp. (215) 986-4011 A19-642, A19-632, A19-622	2-4	192M-2.304G	None	96/4.5M byte/sec (SCSI), 10M byte/sec. (IPI)	184 (A19-642), 138 A19-632), 97 (A19-622)	Ethernet, Token Ring	MCP/AS	No	$14,150-$25,125, depending on model	$18,200,000 (A19-642), $13,760,000 (A19-632), $9,740,000 (A19-622) includes 2-4 CPUs, 192M bytes memory
2200/900	2-8	256M-2G	4.5M	384/4.5M byte/sec.	NP	Ethernet	OS1100	No	$8,700	$8,299,464 includes two CPUs, 256M bytes memory
A19-611	1	96M-1.52G	None	48/4.5M byte/sec. (SCSI), 10M byte/sec. (IPI)	51	Ethernet, Token Ring	MCP/AS	No	$9,190	$5,270,000 includes one CPU, 96M bytes memory
GX8620, GX8520, GX8420, GX8320, GX8220	2-6	512M-10G	None	256 maximum/ Up to 17M byte/sec.	NP	SNA	MVS, VM	Yes	$15,573-$32,457, depending on model	$20,485,000 (GX8620), $17,870,000 (GX8520), $15,006,000 (GX8420), $12,967,000 (GX320)

Your wheeling and dealing guide

If you work for it, you'll get a deal. Be innovative, and you'll get an even better deal. Here are some strategies that companies are taking before signing on the dotted line.

COMPARE USED

Want a new computer? Shop used! According to used computer dealers, a lot more mainframe buyers are shopping used for the first time — without intending to buy. The dealers suspect they are being used mainly as leverage in negotiations for new mainframes.

Of course, you can also shop used to buy used and get a great deal that way. "Our business runs fine with second-generation hardware. We haven't bought a new machine for a long time," says Marvin Hamann, manager of information systems operators at Land-O-Lakes, Inc., a dairy products producer in Minneapolis. The company's latest acquisition was a used IBM 3090 Model 200 E.

IBM tried hard to get Hamann to bite on a new machine. "They were offering us a discount off a new machine, but if you take 20% off a $3 million machine, that's still a lot of money," he says. Hamann paid $400,000 and got the horsepower he needed to run a large IDMS database for at least three years before upgrading.

To get the best price, Hamann called nearly a dozen used computer dealers, including Amdahl Corp. dealers, as well as all the leasing companies. To make comparisons easier, he required that the companies itemize their offers instead of combining the machine with the freebies.

TIME IT WELL

What do comedy and mainframe purchases have in common? The importance of timing. That means understanding the fiscal year and quarterly pressures that drive a sales organization. If you can coordinate your purchase with the closing of the books, you may receive an unusually generous deal as the sales organization scrambles to fatten its numbers.

"We installed our new mainframe in December 1991 and got a pretty good deal," says William Jackson, director of IS at Aristokraft, Inc., a cabinet manufacturer in Jasper, Ind. The company purchased a small Enterprise System/9000 Model 190 to replace a 4381 Model 14.

Ordinarily, Aristokraft would have turned to the used market for its mainframe, but "there weren't any available in the size we wanted," Jackson explains. The company also looked at downsizing to a minicomputer. Unfortunately, "it just wasn't feasible to replace our mainframe software. We would have had to scrap everything," Jackson says.

The machine was a good buy in more ways than one. The Model 190 turned out to be in the same software category as the 4381, but several of the Enterprise Systems Architecture software items were priced lower. As a result, software licensing costs actually dropped about $200 a month (see story page 83).

SHOP 'THE OTHER GUYS'

Now more than ever is the time to shop the competition — whether you're just looking or are serious about buying. Plug-compatible manufacturers (PCMs) can't offer the software-related soft discounts that IBM can (see story page 83), but they compensate with a lower list price and greater hard-dollar discounts. As a rule of thumb, the PCMs try to stay at least 10% to 15% below IBM, according to Nancy Stewart, a senior industry analyst at Dataquest, Inc.

Even if you don't actually leave IBM, your consideration of other vendors may force IBM to be more competitive.

When Duke Power Co. in Charlotte, N.C., put out bids to replace its 3090 Model 600 J in January, it found a very competitive environment. The company had bought IBM exclusively for 10 years, "but in today's environment, we just couldn't afford not to competitively bid this machine," says Alvin Park, manager of data center operations.

After the bids were received, the competition got even hotter. One vendor came back offering to sweeten the deal. Another suggested that if the company booked the business in the second quarter, it could do even better. Another threw in a package of software and other soft discounts.

After benchmarking the machines to pin down their actual performance and evaluating the bids according to an extensive set of criteria (see chart below), Duke went with an Amdahl Model 5995.

Northeast Utilities in Hartford, Conn., experienced a similar situation. "We got quite a bidding war going on," recalls Todd Dixon, vice president at the firm. When it came down to the bottom line, however, IBM rose to the challenge.

Continued on page 83

They saved and are glad

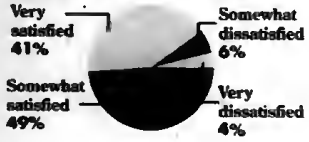
Of 126 respondents who have purchased a mainframe in the past two years:

Most received a discount between 10% and 40% off list price

0%-9% discount:	6
10%-24% discount:	23
25%-39% discount:	24
40%-59% discount:	17
More than 60% discount:	1

(55 respondents didn't know what type of discount they had received.)

The overwhelming majority were satisfied with the price they paid



Source: First Market Research

CW Chart: Janell Genovese

Don't get 'sucker-punched'

It's easy to be blinded by great hardware prices, only to be sucker-punched by unseen software license fees or hardware upgrade charges down the road. Smart shoppers such as Alvin Park, manager of data center operations at Duke Power Co. in Charlotte, N.C., are developing detailed bid evaluation models. Park's model worked so well, he plans to use it again at the end of this year when he puts out a bid to replace an IBM 3090 Model 600 J.

RFP

- The price of each item individual (no bundling).
- Performance benchmarks.
- Specified discounts on future hardware upgrades.
- Warranties and extended warranties.
- Software licensing costs (current and future).
- Environment costs (power, cooling, etc.).

Source: Alan Radding

CW Chart: Janell Genovese

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How to get a better deal

CONTINUED FROM PAGE 79

to your advantage; you just have to link them to what you can really use. Last December, electric power producer Northeast Utilities in Hartford, Conn., shaved 43% off the list price of a $35 million ES/9000, with much of the savings in added-value goodies. The deal was part of IBM's Market Basket program, which bundles a variety of freebies and soft-dollar discounts, says Todd Dixon, vice president at the firm. Included were free disk drives, a year's free maintenance and a large discount on IBM's ImagePlus software — all things the company was planning to buy anyway.

The bottom line is, there is more to getting a great deal than simply ripping the red tag off the box. Besides scrutinizing the deal dangled in front of you, you might want to join the crowd of buyers doing a lot more legwork evaluating IBM's competitors. Many are looking at the used market, which — to maintain its price differential — is very negotiable.

Prices should get even better. Average discounts are expected to drop to 23% this year, compared with an average 18% discount in past years, Cassell says. Others, such as Technology Investment Strategies Corp. in Framingham, Mass., log the average discount at 30%. •

The software factor

No matter how accurately you forecast software licensing costs, they almost always end up higher than you estimate. Nothing has more of an effect on mainframe cost of ownership.

And it's here that IBM has tended to hold a distinct advantage. Unlike the plug-compatible vendors, IBM can play with software licensing prices to move hardware.

For instance, IBM deferred the impact of the full software license upgrade when Hartford, Conn.-based Northeast Utilities moved from a "Group 60" machine to a "Group 80" machine. "They gave us one year at 'Group 70,'" says Todd Dixon, vice president at the Northeast, which saved on software costs.

Some people buy used machines for this very reason: to get a lower software category classification and thus cheaper software.

Sometimes, though, you can get software savings through the compatible vendors, as Alvin Park, manager of data center operations at Duke Power Co. in Charlotte, N.C., discovered.

When Duke Power put out its request for proposal, **Amdahl Corp.** bid a model that had a lower IBM rating (and was thus in a lower category) than the model bid by IBM. By choosing Amdahl, the company's software licensing costs would not increase, even though the company's benchmarks showed it to be an equally powered machine.

"If we had bought the IBM, all our software licensing costs would have gone up, too," Park says.

Just be sure to watch for traps, because sometimes a seemingly innocent hardware upgrade can necessitate a costly software boost.

For instance, Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., found that its newly purchased Enterprise System/9000 lost 30% of its performance when running the company's old versions of software (SP versions of VSE under VM), despite assurances that there would be no problem. "It forced us to go to the ESA operating system, and that drove our [application] software costs through the roof," says Michael Baker, computer center manager at the company.

On the other hand, Oregon Mutual Insurance Co. in McMinnville, Ore., saw a substantial drop in software licensing costs when it moved to Enterprise Systems Architecture (ESA) software, part of an IBM strategy to use software to move companies to ES/9000 hardware.

"Over five years, the software cost savings will pay for the machine," says Cary Gardner, computer operations manager at Oregon Mutual.

ALAN RADDING

Continued from page 82

Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., looked seriously at a **Hitachi Data Systems Corp.** machine before buying an Enterprise System/9000 Model 210 from IBM. The price differential, about $20,000 on an $800,000 machine, wasn't enough to justify a switch. The firm opted for IBM, saving about 11% as part of IBM's early-install program, which gave the company free use of the machine.

Price per MIPS

Amdahl	$50,000
Hitachi	$53,000
IBM	$65,000

Source: Gartner Group, Inc

CONSIDER LOYALTY

On the other hand, declaring yourself a true Blue shop and sticking with IBM has its rewards. Duke Power followed an IBM-only policy for 10 years and enjoyed a level of system integration equivalent to none before it changed.

"We didn't shop around," says Cary Gardner, computer operations manager at Oregon Mutual Insurance Co. in McMinnville, Ore. It was IBM's extensive service network rather than great prices that led the company to declare allegiance to IBM. "We're in a remote location, so we feel we get better service here from IBM," he says.

To keep IBM honest, however, Oregon Mutual shopped the used IBM market. The company was looking for a small mainframe, an ES/9000 Model 150, to replace its IBM 4381. In the end, IBM matched the discounts the company found in the used market on a new machine.

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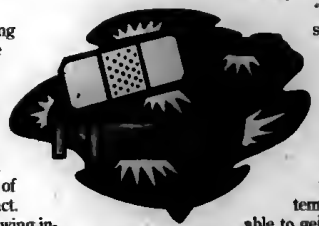


Lynn Tanaka

BY EMILY LEINFUSS

Job hunting can sometimes be like looking for a needle in a haystack. You know there is that perfect position out there for you, but what position that is and where to find it often remains bidden. This economic slump we're in isn't helping matters, with companies in industry after industry in trouble. Well, we'd like to help you find that oh-so-elusive needle. We might not be able to hand you a job, but we can certainly tell you where to investigate. We asked experts and the gainfully employed to help us compile a list of hot industries with existing job opportunities. Here are our picks:

Health care. Healing the sick has become very big business in the U.S. In 1992, the health care industry hit $817 billion, according to the U.S. Department of Commerce. That's a whopping 14% of the gross national product.



"It's a constantly growing industry. More people will need health care as the population grows older," says Chuck Muller, a principal at Andersen, Jones & Muller Associates, an information systems recruitment firm in Southfield, Mich.

Leinfuss is a free-lance writer based in Sarasota, Fla.

As a boon to IS people, all those recession-proof dollars come wrapped in a highly technology-reliant environment. Job demand is high. One recruiter says he filled 20 IS positions this summer.

The reason for such high demand is that many hospital information technology departments have separate, multiplatform environments, Muller says. They may run clinical information systems on a Digital Equipment Corp. VAX, use IBM Application System/400s with personal computers for physician information systems and put administration and cost accounting systems on IBM mainframes. Companies are looking for manpower that can integrate these islands of technology.

"The challenge for us," says Edward Pastor, director of IS at Swedish American Hospital in Rockford, Ill., "is to get all our systems to talk to one another. We have stand-alone cost accounting systems and statistical systems, and we need to be able to get data from all of them, especially for scheduling," Pastor says.

Beyond technical skills, IS chiefs are looking to hire people who have "extras," such as a background in health care management or biology or a course in medical terminology, says John Glaser, vice president of IS at Brigham and Women's Hospital in Boston.

Glaser says he looks for three things in potential hirees: brains (someone as bright "as a 140-watt bulb"), passion for the work and a demonstrable reason for being in the health care business. "Usually I find people with a streak of altruism," he says.

Recently, Glaser hired six IS professionals to bolster his integration efforts. Half of them had technical experience — particularly in the Token Ring environment. Of the remaining three, two were physicians with IS training and one had been a nurse.

Salaries in the field start at about $30,000, according to *Computerworld*'s 1992 salary survey. For instance, senior programmers in the health care field make an average of $36,313, while IS managers/supervisors pull in $55,375.

According to Suzanne Fairlie, president of ProSearch, an IS recruitment firm in Philadelphia, typical advancement in the health care field comes from moving from hospital to hospital or hospital chain to hospital chain.

Banking/Financial services. Despite the bad-boy thievery of junk-bond kings such as Mike Milken, banking and financial services is still alive and kicking.

In banking, the opportunities are geography- and size-dependent, with large banks and the Midwest your best bet. "In the Midwest, banks have not been hit as hard [as other areas of the country]. They are looking for IS staff," Muller says.

For example, Muller's firm is currently

Continued on page 86

Ongoing coverage of employment prospects appears weekly in Computerworld*'s Careers section. For information on the state of jobs in specific industries, turn to these stories in the second half of our calendar:*

July 6: Mail order
Aug. 3: Brokerage houses
Sept. 7: Discount retail
Oct. 5: Media
Nov. 2: Health care
Dec. 7: Tourism trades

Continued from page 85

trying to fill four IS positions at the National Bank of Detroit.

Muller explains that many institutions in the Midwest are run by conservative managers who didn't get involved with risky property management, which has hurt many savings and loans.



Banking IS managers on average earn $58,242, while senior programmers earn $33,958, the *Computerworld* survey found.

Financial services firms — particularly mutual funds and brokerage houses — are also doing quite well and hiring, says Gary Kaplan, president of Gary Kaplan & Associates in Pasadena, Calif. "A lot of people who don't normally invest in the market are investing in mutual funds because they are a safe bet. This is causing back-office operations to be thrown into orbit, and they are staffing accordingly."

Technical expertise in this arena varies, depending on the company's architecture, but Kaplan says he sees a great demand for backgrounds in end-user computing and local-area network skills because of the highly transaction-oriented environment.

Computerworld's survey says IS managers in finance on average make $71,469, with senior programmers making $34,000.

Kaplan adds that the insurance area of financial services is positive for jobs, particularly health care insurance, the property and casualty field and professional liability insurance.

All of these concerns — banking, brokerage and insurance — are heavily transaction-oriented and computer-dependent, Kaplan says. Networking, workstation and end-user skills will pay dividends in the long run, particularly local- and wide-area networking and PC operating system experience.

You can also make yourself more marketable by delving into imaging systems, expert systems/artificial intelligence and client/server technology — areas banks and financial services firms say are of great interest to them, according to a recent study by Cambridge, Mass., research firm CSC Index, Inc.

Information technology consulting. The consulting industry is hot for two reasons: A lot of organizations are outsourcing their IS operations to firms such as the Big Six consultancies or Electronic Data Systems Corp., and "consultants are being used more and more in lieu of permanent employees," Kaplan explains. Companies are looking to save money by reducing their internal staff spending, he says.



"Our head of IS left the company, and rather than turn to an immediate replacement, we hired a consultant who took us through an analysis of where our systems strategy should go," says Richard Fitch, executive vice president of human resources at California Federal Bank, based in Los Angeles.

Cal Fed eventually outsourced its entire IS operation to Systematics Corp., with Systematics eventually hiring 95% of the bank's IS staff, Fitch explains.

Salaries for IS managers in the consulting industry average $58,500, while senior programmers average $36,000, the survey reported.

Consulting firms seek systems professionals with experience working with open systems and client/server technologies, says Jennifer Paulett, area staffing specialist at CAP Gemini Sogeti USA in Akron, Ohio. Another way in the door is expertise in a niche area — particularly computer-aided software engineering (CASE), C++ or Unix, she says.

CAP Gemini recently hired several business analysts. A step up from consultants, business analysts are "people with experience working with clients helping solve their business problems," she says.

At Ernst & Young, mainstay employees are experienced in incorporating mainframe CASE tools in large-scale systems development projects using CICS and IBM's DB2, says Jerry Walls, assistant director for human resources. However, the firm recently began searching for people with client/server and object-oriented programming skills. Walls says Ernst & Young has been aggressively hiring for three years. In the past two months, it has hired more than two dozen consultants.

Because of the high level of interaction with clients, consultants need excellent communications skills, he adds. Team players with integrity are in demand in consulting.

"When we hire, we have immediate changeability and utilization. We do not hire people to be on the beach," Walls says.



Communications/Media. Have a penchant to work with Murphy Brown? Lucky for you, the area that encompasses media, broadcasting, cable television, multimedia and the distribution of electronic media is an up and comer for jobs, says Richard Wonder, national director of the IS division at search firm Robert Half International, Inc. in Menlo Park, Calif.

A case in point: Time Customer Service, Inc. in Tampa, Fla., a division of Time Warner, Inc., recently hired a dozen programmers, data processing director Bob Beckstead says. The firm is also looking for application developers, systems programmers and telecommunications people, he adds.

For his part, recruiter Kaplan recently placed an IS executive in the consumer products division at Walt Disney Co. in Anaheim, Calif., and a vice president of MIS at Buena Vista Home Video, a $2 billion company that distributes Disney videotapes.

Communication businesses — from traditional media to cable TV — are fiercely technology-driven. They are always looking for new ways to use technology, such as videoconferencing and new electronic delivery services, to facilitate their form of communication, Wonder says.

"The new frontier in computing is bridging television, computing and telephone. Whether you call it multimedia or transputing, all companies that use computers from an end-user perspective — especially communications companies — will need software applications to utilize these integrated services," Wonder explains. The technical know-how for this area includes software application development, LAN protocols and the ability to create the bridges among devices, he adds.

The emerging technologies of greatest interest in this area are imaging systems, as well as fourth-generation languages (4GL) and end-user programming languages, according to the CSC Index report.

End-user languages and 4GLs are crucial to getting a better handle on using information for decision-making and quick development of systems to support the business, says Linda Peters, vice president at CSC Index in San Francisco. Leveraging information technology is especially important for publishing companies. "While publishing companies utilize highly advanced technology for printing, they have not historically used information technology in an advanced way" in business, Peters says.

The survey found that average pay for an IS manager in media is $50,400 and $28,000 for a senior programmer.

Distribution. In your heart of hearts you have been dreaming about working in the distribution industry. Not.

It may not seem glamorous or interesting at first, but the dissemination of products is do or die these days for almost every company, says Frederick Crawford, director of business development at Cleveland Consulting Associates in Ohio, which follows distributioo companies. Practices such as just-in-time manufacturing and quick response, in whicb companies produce and ship products on demand rather than maintaining costly inventory, are heavily dependent on technology and technologists.

"Look at Wal-Mart. It doesn't sell anything someone else doesn't sell, and information technology, especially in its distribution area, is the bedrock of its success," Crawford says.

There is a lot of room for technical growth in companies whose main business is distribution. Today, 90% of these firms use large-system IBM mainframes running MVS, so the concentration on large-systems skills, such as MVS programming, is vital, Crawford says.

Ingram Micro, Inc., a $2.5 billion computer hardware distributor and an IBM mainframe, high-volume transaction-processing shop, recently hired a manager for financial applications and two senior systems analysts, according to Senior Vice President Mike Kelly.

Crawford predicts that within 10 years the emphasis in distribution will be on open, client/server architectures, so skills will shift to workstations, PCs and AS/400 technologies.

Software companies. The software industry is growing. The Department of Commerce says the industry, which encompasses large and small systems software, will increase by $14 billion by 1995. The companies hiring tend to be those with a diverse product range, says Lawrence Broe, senior associate for IS recruitment at Gary Kaplan & Associates.

"Companies with a broad client base and a broad product mix are doing very



well, whereas those that put all their resources behind one or two products are getting hit," Broe says. He points to large production software developers such as Candle Corp. and Computer Associates International, Inc. as examples of busy, diversified concerns.

Because it is diversifying its product mix and addressing client/server technologies, CA, for example, is looking for people with specific technical skills, according to Lisa Mars, senior vice president of human resources. Skills in demand are those related to C programming, Unix, DOS, OS/2 and Microsoft Corp.'s Windows.

Software firms tend to have a more technology-driven environment than user firms because technology is their business. At Candle, at least one-third of the entire staff has a technical background, says Linda Bennett, MIS director.

"IS professionals who work in the software indostry can really speak the language of the business," recruiter Kaplan confirms.

An added bonus for the technology-minded is that staffers get to work with the latest products because software vendors often test packages in-house.

Because technology is what software companies do, technical professionals get a chance to diversify, according to Mars. "In our urganization, people move around all the time. They may work in research and development one minute and product support the next, depending on need."



CA's typical career path starts out in quality assurance or testing, moves to product support and finally goes into development. Mars says developing new products is the company's highest level position. "Most technically oriented people here want to be out at the forefront," she adds.

Typical salaries in computer firms are $68,000 for IS managers, $51,500 for systems and programming managers, and $36,000 for senior programmers. •

EXECUTIVE TRACK

The **Federal Reserve Bank of New York** has promoted **Peter Smejkal** to the post of manager in its operations systems department. Smejkal formerly served the same department as special projects director. The bank also named **Sharon T. Wong**, former projects director in the analytical systems department, as a manager in the operations and communications support department.



Karyn Thale is the new director of Technology Services at **Christiansen & Fritsch, Inc.** A veteran of approximately a decade of technology firm marketing, Thale comes to the Portland, Ore.-based direct marketing agency from Microsoft Corp.

The **Times-Mirror Co.** in Los Angeles recently named **Cecilia McRoskey** as the first person to hold the newly minted position of vice president of information technology. McRoskey formerly held the top post at project management firm McRoskey Management Resources.



Veteran information systems executive **Jeffrey Landau** is the new vice president and chief information officer at **National Media Corp.**, a televison "infomercial" production company in Philadelphia. Prior to assuming the post, Landau held the same title at Nutri/System, Inc. He will be responsible for worldwide data processing, IS and telecommunications activities and is also charged with integrating National Media's current data processing systems with those of the firm's five subsidiaries.

Who's on the go?

When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Nell Margolis, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Muscle-stressed to IS: Get involved!

Ergonomic experts say IS should be part of the team fighting repetitive strain injuries

BY MITCH BETTS
CW STAFF

Walk into some offices and you will see computer monitors glaring like mirrors and desks with "secretarial returns" too skinny to support the computer and keyboard. Control panels and modems are piled up so high that users must crane their necks just to look at the monitor.

If the ergonomic hazard potential is sticking out like a sore thumb, however, "the IS people are conspicuous by their absence," according to consultant Robert F. Bettendorf, president of the Institute for Office Ergonomics, Inc. in Manchester Center, Vt.

These days, ergonomic issues are handled by corporate safety and health departments or personnel departments, if at all. But experts in computer ergonomics argue that IS managers should be part of the ergonomics team that helps fight repetitive strain injury (RSI) and other ailments related to computer work.

Government figures show that RSI, in which muscles and nerves are traumatized by repetitious work done at awkward angles, is the fastest growing occupational hazard (see chart page 90). The incidence of RSI in service industries has climbed tenfold in five years.

For intensive keyboard users, including data entry clerks, reservation agents and newspaper editors, RSI usually results in numbness or shooting pains in the hands, wrists and arms. In severe cases, it can completely disable the arm. The RSI epidemic has also produced an outbreak of lawsuits against computer manufacturers [CW, June 15].

"This is an issue that nobody wants to own, so it ends up in the safety and personnel departments," Bettendorf says. "But there should be a real teaming relationship with the IS department." After all, IS departments buy and install lots of the equipment and accessories that are suspect in RSI. IS managers "should have a big role to play when buying new equipment . . . and if they haven't got the knowledge, they should get some training," says David Parkinson, professor of occupational medicine at the State University of New York at Stony Brook.



Burton Morris

IS involvement in the RSI issue need not stop with the purchase decision, Bettendorf adds. For instance, IS departments could add ergonomic topics — such as posture and how to adjust chairs — to their usual bevy of personal computer training classes, he says.

One organization that is trying the interdepartmental team approach is the Library of Congress in Washington, D.C. Concerned about RSI among its intensive keyboard users, the library recently formed an ergonomics committee that includes representatives from the facilities management and IS departments.

The facilities management department "is really leading the effort because it's more a physical thing than it is a computer thing," says Herbert Becker, director of information technology services.

Providing employees with a well-designed VDT work area requires coordination between the IS manager, furniture buyer and facilities manager, experts say. For example, the IS manager and the furniture buyer need to match the size of the desk with the size and placement of the computer and keyboard, while the facilities manager should be consulted to ensure proper lighting for VDT work.

Ergonomists generally recommend a package of remedies that include monitors with some sort of antiglare treatment, chairs and desks that are adjustable so arms and wrists are held at a comfortable level, user training, wrist rests and hourly breaks.

"Computer users should be told to take breaks — to stand up, stretch, look around — whenever they need them. Don't go heads-down for two hours," Bettendorf says.

Most employees forget to take a

Continued on page 90

RSI woes not always work-related



RSI is not new. Such injuries have been around for centuries, occur outside the workplace and have been known by such common names as "tennis elbow" and "writer's cramp."

It is not fair to automatically assume that RSI is job-related, according to ergonomics consultant Robert F. Bettendorf. "Off-the-job activities are every bit as important as on-the-job activities, " be cautions. Knitting, tennis and piano playing could contribute to RSI.

"If someone is getting pain from using a keyboard, they should recognize that they can't go home and knit for four hours because that may well be a bigger problem than the keying," Bettendorf says. But arguments about what is causing the injury should be put on hold while the RSI sufferer gets medical treatment from an expert in the field. Early intervention can prevent RSI from becoming a permanent disability, experts say.

David Parkinson, professor of occupational medicine at the State University of New York at Stony Brook, warns that many RSI cases are misdiagnosed as carpal tunnel syndrome, which involves compressed nerves in the wrist. That leads to unnecessary surgery, he says. "There have been an inordinate number of decompression operations for what has been called carpal tunnel syndrome, which have given no relief to the patients," Parkinson says.

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Repository AD/Cycle International Users Group Conference. Chicago, Oct. 4-7 — Contact: Repository AD/Cycle Group, Santa Monica, Calif. (310) 394-8305.

Multivendor and Third Party Computer Maintenance Conference. San Francisco, Oct. 5-6 — Contact: Frost & Sullivan, Inc., New York, N.Y. (212) 233-1080.

Electronic Data Interchange Association (EDIA) Annual Conference. Nashville, Oct. 5-8 — Contact: Gregory Harter or William Myers, EDIA, Alexandria, Va. (703) 838-8042.

Scan-Tech '92. Anaheim, Calif., Oct. 5-8 — Contact: AIM USA, Pittsburgh, Pa. (412) 963-8588.

REXSYS Users Conference. Boston, Oct. 5-9 — Contact: Recovery Management, Inc., Littleton, Mass. (508) 486-8866.

Enterprise Computing Forum: Client Server '92. Houston, Oct. 7-8 — Contact: John Hendel, Champion Productions, Burnsville, Minn. (713) 225-1601.

OCT. 11-17

The Third Annual East/West High-Tech Forum. Prague, Oct. 11-14 — Contact: Edventure Holdings, Inc., New York, N.Y. (212) 758-3434.

Use, Inc.'s Fall Conference. Atlanta, Oct. 12-16 — Contact: Use, Inc., Lanham, Md. (301) 577-1881.

Europa Telecom '92. Budapest, Oct. 12-17 — Contact: International Telecommunication Union, Switzerland (011-41) 22-730-5926.

Enterprise Network Management Seminar. Elmsford, N.Y., Oct. 13-15 — Contact: Hart Rasmussen, Polytechnic University's Center for Advanced Technology in Telecommunications, Westchester, N.Y. (914) 347-6940.

Networld '92. Dallas, Oct. 13-15 — Contact: Kathy Ryan, Networld, Fort Lee, N.J. (201) 346-1400.

Multimedia World, Inc. Conference. Chicago, Oct. 13-16 — Contact: Jim Prude, Multimedia World, Alexandria, Va. (703) 684-5401.

Microprocessor Forum. Burlingame, Calif., Oct. 14-15 — Contact: Microprocessor Report, Sebastopol, Calif. (707) 823-4004.

DOD-STD Conference. Boston, Oct. 14-16 — Contact: David Maibor Associates, Inc., Needham, Mass. (617) 449-6554.

The National Association of Legal Vendors (NALV) Symposium. Newport Beach, Calif., Oct. 15-16 — Contact: NALV, Nashville, Tenn. (615) 726-3649.

OCT. 18-24

Info/Tech Management '92. Nashville, Oct. 18-21 — Contact: Data Processing Management Association, Park Ridge, Ill. (708) 825-8124.

Nacon '92 Conference and Exhibition. New Orleans, Oct. 18-21 — Contact: National Retail Federation Division, New York, N.Y. (212) 244-8780.

Society of Information Management (SIM) 1992 Annual Conference. Universal City, Calif., Oct. 18-21 — Contact: SIM, Chicago, Ill. (800) 477-4561.

APICS Conference and Exhibition. Montreal, Oct. 18-23 — Contact: The Educational Society for Resource Management, Falls Church, Va. (703) 237-8344.

Directions '92. Dallas, Oct. 19-22 — Contact: Cognos, Burlington, Mass. (617) 229-6600.

International Society for Hybrid Microelectronics '92. San Francisco, Oct. 19-22 — Contact: Terry Ritter, San Jose, Calif. (408) 945-9992.

OCT. 25-31

The 13th Annual Treasury Management Conference. San Diego, Oct. 25-28 — Contact: Treasury Management Association, Baltimore, Md. (301) 907-2862.

ASIS Annual Meeting. Pittsburgh, Oct. 26-29 — Contact: Richard B. Hill, ASIS, Silver Spring, Md. (301) 495-0900.

Total Quality Management '92 Conference and Exhibits. Chicago, Oct. 27-28 — Contact: Pat Jones, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Outsourcing the Help Desk Conference. Colorado Springs, Oct. 27-30 — Contact: Help Desk Institute, Colorado Springs, Colo. (719) 531-5138.

Educom '92. Baltimore, Oct. 28-31 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Expo Comm China. Beijing, Oct. 30-Nov. 4 — Contact: E. J. Krause & Associates, Inc. Bethesda, Md. (301) 986-7800.

NOV. 8-14

U.S. Society of Wang Users (USSWU). Boston, Nov. 9-13 — Contact: USSWU, Chicago, Ill. (708) 652-3888.

12th Annual Eastern American NCR/AT&T Computer Users Conference. Lake Harmony, Pa., Nov. 12-13 — Contact: Frank Whalen, Timm Chess Testing Machine Co. (215) 675-7104, Ext. 216.

Synergy '92. Anaheim, Calif., Nov. 9-13 — Contact: Wingarten Publications, Inc., Boston, Mass. (617) 542-0146.

NOV. 15-21

International Security Systems Symposium and Exhibition. Washington, D.C., Nov. 16-18 — Contact: Krause & Associates, Bethesda, Md. (301) 986-7800.

NOV. 29-DEC. 5

CAUSE '92. Dallas, Dec. 1-4 — Contact: CAUSE, Boulder, Colo. (303) 449-4430.

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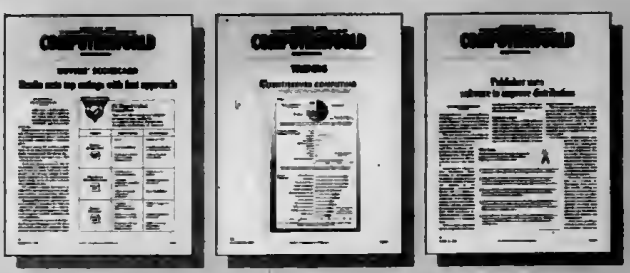
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Muscle-stressed to IS: Get involved!

CONTINUED FROM PAGE 87

break when they are immersed in their work, but there is a new breed of memory-resident software programs that provide an on-screen reminder.

The software monitors the user's keyboard activity and issues a tickler if the user has not switched to some other activity for a period of, say, 10 minutes in every hour. Some packages even suggest stress-reducing exercises that can be done in the office.

Vendors of such products include Escape Ergonomics in Sunnyvale, Calif.; TVM Technologies, Inc. in Glen Cove, N.Y.; and Visionary Software, Inc. in Portland, Ore.

The real value in purchasing the rest-break software may be the message it sends to employees. "It's a message from management that 'We're serious. We want you to take breaks.' Otherwise, people don't really believe it," Bettendorf says.

Management attitudes and psychological factors such as job stress apparently play a role in RSI. A recent study by the National Institute for Occupational Safety and Health found RSI cropping up more among workers who fear losing their jobs, face increased work loads, lack job diversity and are subjected to electronic performance monitoring.

IS executives involved in business process re-engineering projects should also be on the lookout for ways to redesign keyboard-intensive jobs and eliminate unnecessary tasks, Bettendorf adds, so that VDT work is less tedious and more productive.

On the the legal front, the only RSI lawsuit that has gone to trial so far was won by the employer. In December 1990, a federal court jury cleared Amtrak of charges that it failed to provide a safe workplace for an employee who blamed intensive keyboard work for her disabling RSI.

The employee, Debra Haririnia, alleged that Washington, D.C.-based Amtrak was negligent in failing to tell her how to avoid RSI. Haririnia sought $825,000 in damages, but the jury ruled that Amtrak "provided a reasonably safe workplace and equipment and did not contribute to her injuries.

On the other hand, the advent of the Americans with Disabilities Act of 1990, which went into effect this past July 26, will make it more difficult for employers to ignore the RSI problem.

The act prohibits employers from discriminating against the disabled in hiring and firing and includes RSI in its broad definition of a disability. "It will make it much more difficult to dump an employee with a long-term RSI disability," even if the disability makes it impossible for the employee to use a keyboard, according to David J. Eisen, director of research at The Newspaper Guild in Silver Spring, Md.

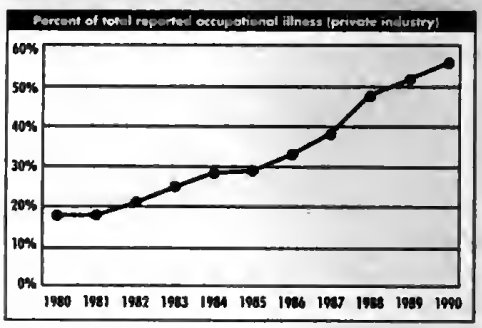
Furthermore, the act requires employers to make "reasonable accommodations for the physical or mental limitations of otherwise qualified persons . . . who can perform the essential functions of the job." For RSI sufferers, one possible accommodation would be voice-activated computers, Eisen said.

A few newspaper employees with RSI are using voice-activated computers to deal with the problem, he said, adding that it would be wise for employers to have several of the machines on hand for people with temporary RSI problems to use.

Although speech recognition products are slow and have limited vocabularies, Eisen said, voice-activated computers can be a "blessing" for RSI sufferers who otherwise could see their careers come to a painful end.

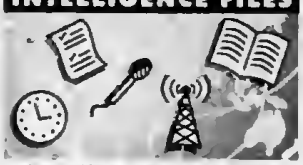
Over and over

Disorders associated with repeated trauma such as carpal tunnel syndrome steadily increased during the 1980s



Source: Bureau of Labor Statistics

INTELLIGENCE FILES



Items of interest from publications, speeches, surveys and research projects

Expert systems vs. complexity

■ Expert systems are being used by more businesses to handle complex transactions so that employees can concentrate on customer relations. American Express, for example, uses a rules-based "knowledge highway" system to manage credit transactions, from card applications to collecting overdue accounts.

Compaq Computer Corp. is using a case-based reasoning system to create a library of customer problems and solutions.

Someday, however, intelligent computers may go too far. Bankers, for example, are talking about using artificial intelligence to help sell financial products that are too sophisticated for their salesmen to comprehend.

Source: *"White-collar computers,"* The Economist, *Aug. 1, 1992.*

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Don't discard your ace

■ Managers of information technology are abrogating their responsibility and missing a great opportunity if they turn the job of setting the corporate technology agenda over to a consultant, researcher and consultant Gordon Hewitt says. "Traditionally, the road to the top has not gone through the IT department, so senior executives are often uncomfortable with technology issues. This situation gives the IT manager a great opportunity to shape the thinking of the board," Hewitt says. "A board will profit from listening to its IT manager because IT has shifted from being a cost center concerned only with improving internal processes to a major source of competitive advantage."

Source: *"IT Managers Step Up — to the Boardroom," by Peter Golden,* Beyond Computing, *August/September 1992.*

.....

Quality Police

■ How do you know when your quality initiative is going off track? One sure sign, says IS consultant Michael Hammer, is "when your company has a group within it that becomes known as 'The Quality Police.'"

Source: *Remarks by Michael Hammer during the Q&A period at a management forum sponsored by Hammer & Co., June 1992.*

.....

Dancing with computers

■ "The thing I hated about computers was that you had to sit down to use them. (Actually, this has always been true of intellectual work.) How could you talk about human/machine interaction when all you could do was wiggle your fingers on a 100-year-old keyboard? Some interaction! I wanted to wiggle the rest of me. I wanted to use my whole body to interact with computers."

Source: *Myron Krueger, artist, scientist and pioneering explorer of artificial reality, in an interview with Jas. Morgan for the fall issue of* Mondo 2000.

.....

Motivating the ranks

■ DEC's designated President Robert Palmer knows how to motivate, according to one of his senior managers. "In the first staff meeting I went to, he told the group, 'I need information to make decisions. If I don't get it, I still need to make them. You can either participate, or I'll work around you.' "

Source: *"Digital: The Next Generation," by Glenn Rifkin,* Upside *magazine, September 1992.*

.....

'Where's the beef?'

■ I bet Dave's daughter Wendy inspired him to move toward putting PCs in all of his new restaurants. David Thomas, chairman of Wendy's International, Inc., is pushing technology to get managers away from administrative back-office tasks and out front managing. "That's where technology can help us — not to replace someone, but to get managers out into the restaurant."

Source: *" 'You need a mop-bucket attitude,' " Interview by* Profit *magazine, July/August 1992.*

.....

Learning curve

■ The time it takes an employee to get "up to speed" can cost managers time and money in a project, "CPM Bulletin" says up-to-speed learning is pronounced in white-collar projects such as software development.

In all projects, but particularly in complex ones such as software development, most participants spend much of their first few weeks familiarizing themselves with the project. During this time, they are usually only working at 60% of their potential. It can take six weeks before they reach 100% productivity. Delays can be minimized by limiting the number of new people introduced after the initial stage of such projects.

Source: *"Up to Speed: The Cost of Learning on an 'Ideally Planned' White-Collar Project," "CPM Bulletin," Summer 1992.*

.....

Compiled by Kelly E. Dwyer, assistant editor, features, with contributions from Mitch Betts, national correspondent; Nell Margolis, senior editor, management; and Joanne Kelleher, features editor.

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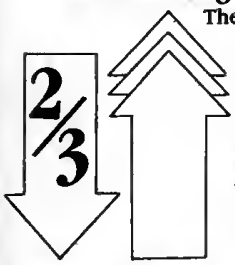
A few important tips on recruiting computer professionals

Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

What's more, many of today's recruiters *don't use* today's most efficient methods — methods that save time and money for some widely unknown reasons.

The supply of qualified professionals isn't meeting demand



The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business that require the skills of this shrinking market than ever before. And while you may never consider the company next door your competitor, it likely *is* competing for the same computer talent today. The result is a classic supply/demand problem that isn't changing for the better -and that's sure to make your recruiting tougher in the '90s.

Ads in local papers don't reach your major hiring market anymore

That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who would *consider* new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)



For every 10 of today's computer job seekers . . .
2 are Active
7 are Passive
1 is a Non-mover

In short, this means that your ad in today's local newspaper reaches no more than 20 percent of today's computer job seekers. What's worse, if you're not using other vehicles that reach far more job seekers, your local newspaper expenses are as inefficient as their limited audience.

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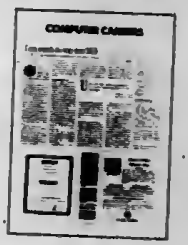
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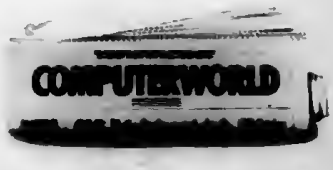
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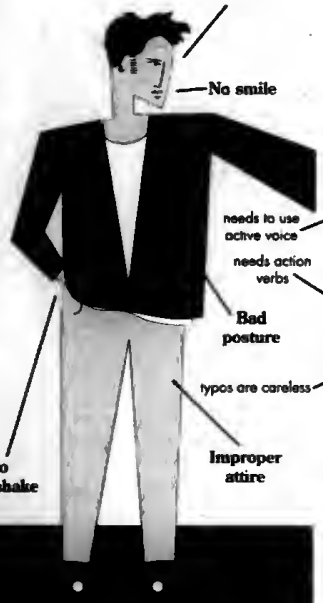
COMPUTER CAREERS

How to improve your employability

Avoid these mistakes and . . .

What not to say:

- 'What was the question again?' (Sounds like you're not paying attention.)
- 'My last company was the worst place to work. My manager treated employees very unjustly.' (Gives the impression of sour grapes.)
- 'I never should have been one of the people cut. I was a good employee.' (Comes across as bitter or negative about a layoff.)
- 'What does your company do? I haven't had a chance to find out.' (Makes you look unprepared.)
- 'I prefer to work on my own.' (Most IS departments are looking for team players and good communicators.)



too vague

Joe Jones

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Languages: Cobol, Cobol II, BAL, C

EXPERIENCE:
Contract programmer/Analyst 11/88-Present
Designed, coded and maintained Cobol CICS and batch report programs under MVS. Applications included nuclear power plant facilities, management systems, inventory control, security, purchasing, work orders, time accounting and entertainment industry applications. Clients included Motion Movies International and Pacific Power.

How long at each assignment? Which skills were used at each?

Institutional Software, Inc., San Luis Obispo, Calif. 7/87-11/88
Senior systems analyst
Project manager for a Cobol conversion from Hewlett-Packard to CICS on IBM. Responsibilities included designing major portions of the system, converting and creating new Cobol programs, installing the product under MVS/XA and writing utilities for VM/CMS. Installed and maintained IBM 9370 and third-party software on it. Established and maintained project schedules, responsible for the project meeting deadlines.

too obvious

California Computer Corp., San Francisco, Calif. 4/84-7/87
Systems engineer
Field support for VM/CMS-compatible minicomputer. Maintained hardware and software for customers. Hardware and software problem analysis and resolution. Trained customers how to use the machine. Supported salesmen during presales activities such as giving demonstrations and presentations.

American Bancorp., San Francisco, Calif. 8/81-4/84
Systems analyst
Technical support to users. Consulted with users on design, development and implementation of programs and systems. Software support.

Data Systems, Inc., San Francisco, Calif. 3/78-8/81
Operator/Programmer analyst
Technical support to users. Debugged customers' programs. Troubleshot telecommunication problems. Operated a Cyber 6400 computer.

EDUCATION:
Computer Learning Center, Los Angeles, Calif. 1978
Completed courses in Cobol, RPG, BAL, JCL, systems analysis and design.

Cuesta College, San Luis Obispo, Calif. 1989
Completed course in C programming language.

The right image (next page)

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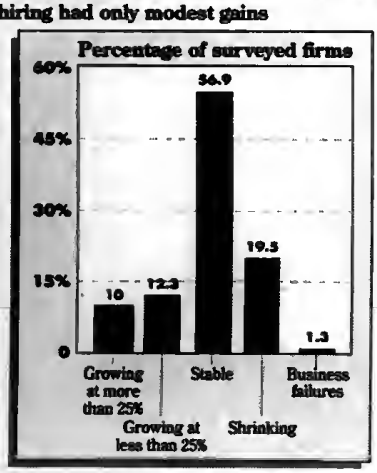
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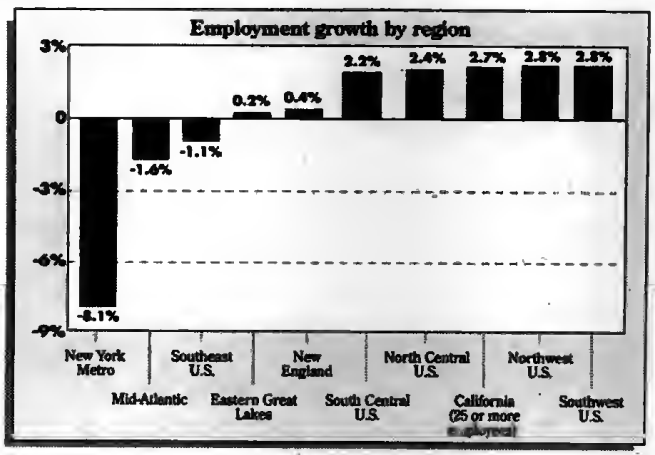
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Computerworld/Corptech Career Index

SUBASSEMBLIES AND COMPONENTS – The New York Metro region took a substantial employment plunge in this industry while those regions hiring had only modest gains







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Research Analyst/Aircraft Scheduling to design & implement a networked, multi-user decision support system application for aircraft scheduling using a graphical user interface, develop computer models applying operations research techniques to solve complex scheduling problems of routing aircraft achieve required criteria using object-oriented programming techniques, implement a system for submitting requests to remote DOS & UNIX workstations to run complex mathematical models utilize image processing techniques to display & edit aircraft-gate assignments apply concepts of artificial intelligence & neural network methodology to develop mathematical models for aircraft scheduling & passenger demand forecasting, plan install & support a LAN system for aircraft scheduling which links multiple DOS & UNIX workstations. Master of Science degree in Systems Engineering required as well as 1 year of experience in job offered or 1 year of experience as Software Engineer and/or Systems Engineer and/or Research Assistant or any combination thereof. Will accept applicants with Masters degrees in one of the following areas: Industrial Engineering & Operations Research, Operations Research and Systems Analysis, Operations Research, or Transportation Systems. Applicants must have completed 1 course in each of the following: linear & integer programming, operations research, systems design or software engineering, expert systems, numerical analysis, parallel processing. Coursework or experience must have included object-oriented programming as well as design & development of networked multi-user applications, databases & expert systems, image processing & use of neural network methodology in mathematical modeling. 40 hrs. M/F 9 a.m. to 5 p.m. $39,000 per annum. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume, degree certificate and transcripts to Illinois Department of Employment Security, 401 S. State - 3 South, Chicago, IL 60605. Attn: Lan Bolsa. Ref. No. #V-IL-5919-B. NO CALLS. AN EMPLOYER PAID AD

Programmer Analyst - 40 hours/week 9:00 a.m. - 5:00 p.m. $26,800/year. Job requires 4 yrs. of college study in major field of computer science or engineering & 2 yrs. experience in job offered or related occupation; must have 1 yr. demonstrated experience in developing accounting, manufacturing & distribution application systems programs. Working knowledge of UNIX, Informix, UNIFY, C & COBOL environments necessary. Academic background must include at least 15 credits in computer science courses including programming, logic design, data structures & mini microsystems (or equivalents to those courses). Job duties: Analyze commercial software programs for improved use in accounting, manufacturing & distribution applications. Design, develop, enhance new efficient software programs & integrate systems based on user needs. Using UNIX, Informix, UNIFY, C & COBOL, devises new or enhanced plans through structured analysis & design. Determine accurate cost & time estimates. Prepare corresponding instructive diagrams, set up databases, direct implementation of design specifications. Provide technical help, review systems operation & revise design & application deficiencies. Qualified applicants should send resume and verification of requirements to Mr. Paul Bant, Job Order No. FL0675746. Job Service of Florida, 3421 Lawton Road, Orlando, Florida 32803. Employer paid ad.

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- 'I was part of a team that saved the company $500,000 by streamlining a procedure.' (Showcases you as a teamplayer.)
- 'What opportunities are there for advancement?.' (Shows initiative.)



Joseph Jones

EDUCATION:
1978 **Computer Learning Center**, Los Angeles, Calif.
Earned diploma in computer programming and analysis. Completed courses in Cobol, RPG, BAL, JCL, systems analysis and design.

1989 **Cuesta College**, San Luis Obispo, Calif.
Completed course in C programming language.

adds software to make a complete list

Hardware: IBM 30XX (S/MVS/XA), IBM 9370 (VM/CMS), IBM PC (MS-DOS), HP 3000 (MPE)
Software: Cobol, CICS, JCL, Intertest, CA-Datacom, Advanced Debugging Facility, File-Aid, Unicorn (CICS development tool), ALC, Fortran, Nomad, Displa, Telegraf, Basic, Yourdon methodology

gives impact up front — spells out unfamiliar acronyms

PROFESSIONAL SUMMARY:
More than 12 years of progressively responsible experience designing and implementing mainframe applications with a strong focus on user analysis/support and financial applications.

EXPERIENCE:
Consultant (Nov. 1988 to Present)
As a member of team, developed and enhanced on-line and batch applications including:

Motion Movies International (Dec. 1990 to March 1991) — spells out dates of employment
Specific applications included royalty and television systems. Developed Cobol and CICS applications in IBM 30XX (OS/MVS) environment. Left position at end of contract.

Pacific Power (Nov 1988 to Nov 1990)
Applications included inventory control, purchasing, accounting and management reporting. Used Cobol and CICS in IBM 30XX (OS/MVS) environment with CA-Datacom. Met extensively with users to determine business requirements. Analyzed needs and designed solutions. Wrote and tested structured code. Wrote documentation. Trained users. Made ongoing enhancements per user requests.

Institutional Software, Inc., San Luis Obispo, Calif. (July 1987 to Nov 1988)
Senior systems analyst/Project leader
Company develops and markets software for the commercial banking market with a diverse product line ranging from mainframe to microcomputer applications.

As project manager, directed a staff of up to 15 employees and contractors in the porting of all product code from HP 3000 to IBM 9370 with Cobol and CICS. Personally designed and rewrote major portions of the applications to accommodate new systems interfaces and file systems. Installed the product under MVS/XA. Wrote VM/CMS utilities. Met with management to determine project milestones and critical components. Took corrective action to bring projects in on time and within budget.

emphasizes management responsibilities

identifies major accomplishments

California Computer Corp., San Francisco, Calif. (April 1984 to July 1987)
Systems engineer
Provided field support for VM/CMS-compatible minicomputer. Maintained hardware and software for customers. Responsible for hardware and software problem analysis and resolution. Trained customers. Supported salesmen during presales activities by giving demonstrations and presentations.

uses action verbs

American Bancorp, San Francisco, Calif. (Aug. 1981 to April 1984)
Research analyst
Provided technical support to users. Consulted with users on design, development and implementation of programs and systems.

Data Systems, Inc., San Francisco, Calif. (March 1978 to Aug. 1981)
Programmer/Operator
Provided technical support to users. Debugged customers' programs. Responsible for troubleshooting telecommunication problems. Operated a Cyber 6400 computer.

Special thanks to Jim Parker, a senior MIS recruiter at Technical Connections, Inc. in Los Angeles

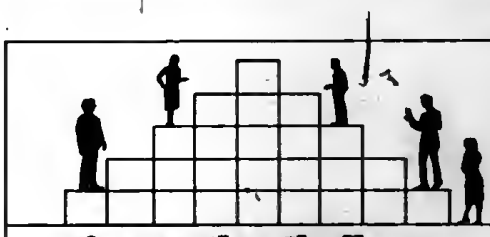
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(subject to revision)

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- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.
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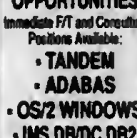
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Sidestep customization pitfalls

Preventive measures can help ensure software usability, avoid headaches



BY JOEL GILMAN
SPECIAL TO CW

Oe of the more hazard-ridden projects an informatioo systems manager can engage in is vendor customized software. You really have to take some precautionary measures if you don't want to end up wasting a lot of money on an unusable system or wasting a lot of time waiting for the final product. Some people have even ended up in court arguing that they never got the system they originally contracted for.

Although there are no hard-and-fast rules — system customizatioo is bound to be a bumpy ride — there are specific problems that ootoriously crop up. Keep them in mind and you are sure to avoid some unnecessary headaches.

▸▸ Write clear RFPs

Drafting a request for proposal (RFP) is the first step in any system customization. Unfortunately, most RFPs end up too long and too vague to be meaningful. Considering that this is where you determine what you want the eventual system to be, you should take great pains to be thorough.

In addition, the contents of RFPs are legally binding once they are included in the contract.

For a better idea of what you want to include in the RFP, compare the features you need in the new system with the shortcomings you've found in the off-the-shelf software you've rejected. This will give you a base to start from and ensure that you get better proposals from vendors.

▸▸ Two-part contracts

A well-drafted contract can mean the difference between having to pay for a system you don't want and being free to walk away if you're oot completely satisfied. So make it count!

For optimum flexibility, divide the contract into two phases: the prototype and design phase, and the implementation phase.

During Phase I, you will be bound to paying the vendor for prototypes and a customized design. However, once the design is finished, you are in no way obligated to follow through with the implementation. In fact, you could even back off for a little while and compare the customized software with prepackaged software and see which one works better for you.

Until you sign on for Phase II, you are still evaluating the product and have not committed to it. You've spent a lot of money to get to this point, so don't be afraid to speak up if you don't like what you see.

Once you have agreed to the design, Phase II begins, and there is no looking back.

▸▸ Insist on a prototype

During contract negotiations, insist on a system prototype — don't settle for a written spec or design document. With the dummy system, users can interact with the screens and commands and suggest changes for the final system.

Specs simply spell out whether a system will perform a given function, no matter how clumsily or slowly. If users aren't happy with the final system, they have no legal recourse if the vendor can prove it meets the spec. What's more, many courts are poorly equipped to deal with this type of dispute.

Because users can actually use a prototype, they can see right off the bat if a function works well or "just works." The downside is that you have to pay for the prototype. The screen design will be used in the final product, but the underlying software — called scaffolding — is only used for the prototype and will be discarded after the design is approved.

▸▸ Review design thoroughly

Make sure key users thoroughly evaluate the design before agreeing to implementation. One frequent problem is that key users are not involved. Even with a well-designed prototype, an unsatisfactory system can be the result if key users don't take the time to thoroughly evaluate it.

This is a problem purely for the user organization: Key users have to be encouraged and motivated to spend weeks evaluating the prototype.

▸▸ Get a source-code license

If you proceed with the custom system, insist on a source-code license. If the vendor refuses, find a new vendor or use prepackaged software.

Refining and modifying software takes time and can become costly if you can't make changes to the source code yourself.

▸▸ Document and train

Don't skimp on documentation and training. If this is a custom system, you won't be able to pick up a how-to manual from the local bookstore. All your information on the system will come from the vendor, so be sure the vendor provides you with adequate documentation.

How do you know if it's adequate? Ask to see a manual that was written for another customer. Reading this documentation from cover to cover can tell you much about the vendor and the product.

Similarly, be sure the vendor provides training, and be sure to give your people adequate off-site training time.

One final tip: Remember to negotiate for training at the contract stage. Many buyers forget to ask or only vaguely mentioo it to the vendor. If you don't ask, you don't get, and factoring it in later could be more expensive.

Gilman is a Seattle-based attorney who practices computer law.

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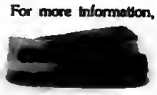


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The BoCoEx index on used computers

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PS/2 Model L40SX	$1,000	$1,200	$900
PS/2 Model 55SX	$900	$1,300	$800
PS/2 Model 60	$600	$900	$325
PS/2 Model P70	$1,650	$1,900	$1,200
PS/2 Model 80	$1,400	$1,600	$1,100
PS/2 Model 95	$3,000	$3,500	$2,600
Compaq Portable II	$425	$500	$375
Portable III	$500	$600	$250
Portable 386	$1,100	$1,300	$900
SLT-286	$700	$900	$400
LTE-286	$800	$900	$500
Deskpro 286E	$500	$1,000	$325
Deskpro 386/33	$1,850	$2,250	$1,400
Apple Macintosh Classic	$750	$875	$500
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Specifications for said Request for Proposals, including a form of affidavit to accompany any such Proposal, are on file and available at the office of the Commission's Purchasing Agent, at 216/234-2081, ext. 252. These documents will be forwarded upon request and without charge to any interested party. Questions on technical issues should be referred to Craig Rudolphy, Comptroller, at 216/234-2081, ext. 275.

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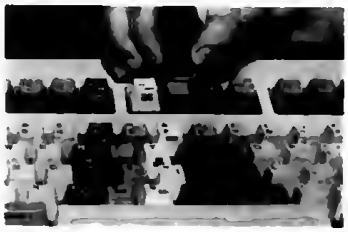


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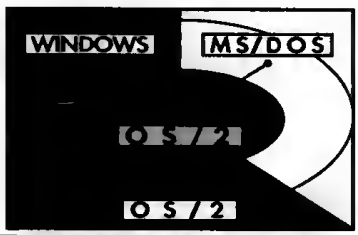
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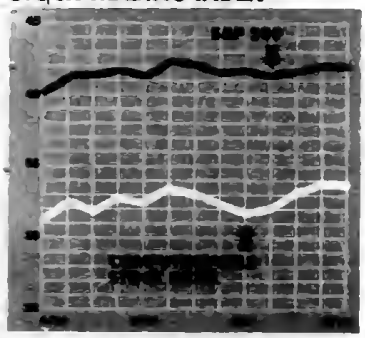
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Industry Almanac

SECTOR FOCUS: WORKSTATIONS & SOFTWARE

Laura Conigliaro and Gibbs Moody
Prudential Securities, Inc.
Sept. 10, 1992

Windows New Technology (NT), **Microsoft Corp.**'s (MSFT) high-performance operating system, is expected to elbow its way into the Unix market, possibly stunting or wiping out any growth opportunities for vendors such as **Sun Microsystems, Inc.** (SUNW).

However, NT must first hurdle over a few obstacles.

LAN Manager, a stand-alone product that will be bundled as the networking portion of NT, has so far garnered lukewarm responses from users. Because Windows NT's objective is to target department-level computing and beyond, a more robust LAN Manager — scheduled for delivery at the end of next year — is essential.

LISA DAVIDSON

Software signals

A collection of brokerage firm ratings for selected software stocks

	Alex. Brown & Sons, Inc.	Shearson Lehman Brothers, Inc.
Autodesk, Inc.	Neutral	Neutral
Borland International, Inc.	Buy	Out-perform
Computer Associates International, Inc.	Buy	Neutral
Informix Corp.	Strong buy	Neutral
Interleaf, Inc.	Buy	Under-perform
Microsoft Corp.	Strong buy	Buy
Oracle Corp.	Buy	Neutral
Sybase, Inc.	Neutral	Neutral

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, SEPTEMBER 18, 1992

TOP PERCENT GAINERS

Zeos International Ltd. (L)	89.25
Corporate Software	28.57
Phoenix Technologies	25.81
Planet Corp	24.07
Pyramid Technology (L)	19.50
Psychex (H)	15.50
EMC Corp.	15.48
Ariel Communication Corp. (L)	14.29

TOP PERCENT LOSERS

Amdahl Corp.*	-35.34
Protexon Inc.	-32.50
Symantec Corp. (L)	-30.88
Everex Systems Inc. (L)	-25.00
State of the Art	-24.00
Mesa Software	-14.91
Konrag Inc	-14.29
Microcom Inc.	-13.75

TOP DOLLAR GAINERS

Psychex (H)	4.25
Wellfleet Communications (H)	4.12
Novell Inc.*	3.38
Planet Corp.	3.25
Computer Sciences*	2.88
EMC Corp.	2.75
Reynolds and Reynolds	2.50
Zeos International Ltd. (L)	2.25

TOP DOLLAR LOSERS

Amdahl Corp.*	-5.13
Protexon Inc.	-4.88
Symantec Corp. (L)	-4.75
IBM*	-4.50
Borland Int'l Inc.*	-4.50
Silicon Graphics	-2.63
Konrag Inc.	-2.63
Platinum Technology	-2.00

Exch	52-Week High	52-Week Low		Sept. 18 Close	Wk Net Change	Wk Pct Change
Communications and Network Services					Up 0.79%	
OTC	15.00	8.00	3COM Corp.*	14.13	0.88	3.67
NYS	77.50	58.75	American Info Techs Corp.*	68.50	0.88	1.29
NYS	44.88	32.88	AT&T*	44.00	0.25	0.57
OTC	4.25	0.75	Ariel Communication Corp. (L)	1.00	0.13	14.29
NYS	69.75	40.25	Bell Atlantic Corp	48.38	-0.25	-0.51
NYS	68.50	43.38	Bellsouth Corp.	52.13	-0.13	-0.24
NYS	9.75	6.75	Bolt, Beranek & Newman	4.50	-0.13	-2.70
NYS	65.88	38.63	Cabletron Systems	62.38	-0.63	-0.86
OTC	31.00	17.50	Chipcom Corp	20.38	0.88	3.43
OTC	65.25	18.63	Cisco Systems Inc. (H)	54.50	1.12	2.11
OTC	35.25	5.75	Compression Labs Inc.	7.25	-0.25	-3.33
OTC	3.38	0.88	Data Switch Corp.	1.75	0.12	7.86
NYS	23.63	14.88	Digital Comm. Assoc.*	14.50	-0.38	-2.52
OTC	19.25	6.00	Digital Systems Int'l Inc.	10.50	0.88	9.09
OTC	9.38	3.63	DSC Communications	6.38	0.63	7.14
OTC	10.88	4.75	Fibronix Int'l Inc.	8.63	0.00	0.00
OTC	37.50	10.50	Planet Corp.	19.75	3.25	24.07
OTC	3.38	1.13	Gandalf Technologies Inc.	2.25	0.13	2.86
OTC	2.25	0.88	Gateway Communications	1.69	-0.06	-3.73
NYS	8.50	2.25	General Datacomm Inds.	3.50	-0.13	-3.46
ASE	6.88	0.50	Go Video	2.38	-0.13	-5.00
NYS	36.75	28.75	GTE Corp.*	33.25	0.13	0.38
NYS	70.63	50.00	ITT Corp	54.25	-0.38	-0.68
OTC	39.25	25.25	MCI Comm. Corp. (H)	35.25	0.00	0.00
OTC	14.50	2.25	Microcom Inc.	3.13	-0.50	-13.75
NYS	18.25	6.50	Network Equipment Tech.*	11.50	-0.38	-3.16
OTC	25.50	8.00	Network General	12.25	0.25	2.08
OTC	20.00	5.50	Network Systems Corp.	12.25	1.13	10.11
OTC	18.50	2.63	Newbridge Networks Corp.	18.50	2.13	12.98
NYS	49.25	33.75	Northern Telecom Ltd.*	35.00	0.00	0.00
OTC	58.00	35.50	Novell Inc.*	57.50	3.38	6.24
NYS	88.88	68.13	Wyse Corp.*	69.38	0.63	0.76
OTC	37.50	16.50	Octel Communications Corp	23.00	0.25	1.10
OTC	6.88	4.00	Penril Data Comm. Ntwks	5.38	-0.13	-2.27
OTC	53.00	10.25	Picturetel Corp.	14.50	-0.25	-1.69
OTC	9.75	3.75	Protexon Inc.	10.13	-4.88	-32.50
NYS	25.50	12.50	Scientific Atlanta Inc. (H)	28.50	-0.63	-2.16
NYS	86.00	63.75	Southwestern Bell Corp	68.13	0.38	0.57
NYS	38.38	20.75	Sprint Corp	22.63	-0.38	-1.63
OTC	15.63	7.50	Standard Microsystems Corp(H)	13.50	-0.38	-2.70
OTC	42.25	14.25	Synoptics Communications (H)	42.00	1.38	3.39
NYS	40.00	32.88	US West Inc	37.50	-0.63	-1.64
OTC	86.50	34.00	Wellfleet Communications (H)	46.00	4.13	9.86
PC and Workstations					Up 3.26%	
OTC	14.50	4.00	Advanced Logic Research (L)	4.28	-0.25	-5.56
OTC	70.00	42.75	Apple Computer Inc.*	56.50	-1.13	-2.36
OTC	32.25	11.38	AST Research Inc.*	19.50	1.25	6.90
NYS	19.25	6.75	Commodore Int'l	7.50	-0.50	-6.25
NYS	35.75	22.13	Compaq Computer Corp.*	34.88	2.00	6.08
OTC	29.00	13.91	Dell Computer Corp	26.25	1.75	8.80
OTC	7.75	1.50	Everex Systems Inc. (L)	1.50	-0.50	-25.00
NYS	34.00	21.25	Harris Corp.	32.63	1.25	3.99
NYS	85.00	44.63	Hewlett-Packard Co.*	39.50	2.13	3.70
NYS	29.75	14.12	Silicon Graphics	50.25	-2.63	-11.48
OTC	39.88	20.75	Sun Microsystems Inc.*	31.25	0.13	0.40
NYS	31.25	22.25	Tandy Corp.*	24.00	0.00	0.00
NYS	11.13	2.13	Zenith Electronics	8.63	-0.13	-1.85
OTC	25.90	2.75	Zeos International Ltd (L)	5.50	2.25	69.23
Large Systems					Off 1.80%	
ASE	20.63	9.38	Amdahl Corp.*	9.88	-9.13	-35.34
NYS	15.50	9.41	Cendian Corp	14.00	-0.13	-0.88
NYS	16.38	2.25	Convex Computer	9.25	-0.13	-1.88
OTC	19.63	1.88	Cray Computer	3.00	0.00	0.00
NYS	32.25	22.75	Cray Research Inc.*	25.88	0.00	0.00
NYS	22.50	7.13	Data General Corp	10.00	0.00	0.00
NYS	85.50	33.25	Digital Equipment Corp.*	39.38	1.38	3.62
NYS	105.88	81.63	IBM*	83.50	-4.50	-5.11
OTC	13.25	6.00	Kendall Square Research	9.25	0.25	2.78
NYS	121.25	88.25	Matsushita Electronics	89.00	0.00	0.00
OTC	19.75	9.75	Pyramid Technology (L)	9.50	1.38	16.30
OTC	17.88	5.12	Sequent Computer Sys.	16.13	-0.50	-3.01
OTC	16.38	4.25	Sequoia Systems Inc	8.00	0.00	0.00
NYS	54.25	37.38	Stratus Computer Inc.*	39.38	0.38	0.82
NYS	15.13	9.50	Tandem Computers Inc.*	10.88	-0.25	-2.25
NYS	11.75	3.63	Unisys Corp.*	6.88	0.00	0.00
ASE	7.50	0.25	Wang Labs Inc. (b)*	0.44	-0.06	-12.40
Software					Off 0.17%	
OTC	58.50	21.50	Adobe Systems Inc. (L)	32.75	0.38	1.16
OTC	13.25	2.50	Ai Corp.	3.50	0.13	3.70
OTC	85.00	11.50	Aldus Corp	13.00	0.25	1.89
OTC	19.75	8.50	American Software Inc.	9.63	-0.50	-4.94
OTC	20.00	9.75	Ask Computer Systems	15.25	-1.00	-6.15
OTC	52.00	23.25	Autodesk Inc	89.50	-1.00	-2.09
OTC	37.75	7.75	Bachman Info. Systems	7.00	-1.00	-12.50
OTC	42.50	21.50	BGS Systems Inc.	38.25	1.75	4.79
OTC	75.00	37.25	BMC Software Inc.	58.75	1.75	3.07
OTC	20.50	9.00	Boole & Babbage	19.88	0.38	2.03
OTC	85.75	35.00	Borland Int'l Inc.*	41.38	-4.50	-9.70
OTC	11.25	3.63	CE Software	9.50	0.38	4.08
ASE	18.63	6.88	Cheyenne Software Inc. (H)	18.63	1.75	10.37
OTC	59.38	6.88	Cognos Inc. (L)	7.25	0.38	5.85
NYS	17.00	7.50	Computer Associates*	15.50	-0.50	-3.13
Semiconductors					Off 0.64%	
NYS	21.50	7.38	Advanced Micro Devices	12.25	-0.13	-1.01
NYS	11.12	7.00	Analog Devices Inc.	10.88	0.13	1.16
OTC	12.00	8.75	Atmel Corp.	10.88	-0.13	-1.14
OTC	14.13	3.25	Chips and Technologies	4.25	0.25	6.25
NYS	21.50	7.88	Cypress Semiconductor Corp	8.75	-1.25	-12.50
NYS	11.63	6.25	Dallas Semiconductor	11.63	0.38	3.33
NYS	68.75	36.50	Intel Corp.*	68.25	1.25	1.86
NYS	9.88	6.25	LSI Logic Corp.	8.88	0.00	0.00
NYS	22.38	12.13	Micron Technology	14.63	-0.63	-4.10
NYS	91.00	54.00	Motorola Inc.* (H)	50.00	0.00	0.00
NYS	12.75	3.88	National Semiconductor* (H)	12.13	0.25	2.11
OTC	27.38	8.25	Sierra Semiconductor	10.88	-1.50	-12.50
NYS	46.00	28.00	Texas Instruments* (H)	45.00	1.50	3.45
OTC	10.88	6.00	VLSI Technology	7.88	-0.63	-7.38
OTC	6.75	2.13	Weitek	3.13	0.12	4.17
ASE	2.63	2.00	Western Digital Corp.	4.63	0.12	2.78
OTC	32.50	17.25	Xilinx	50.50	0.00	0.00
OTC	11.88	6.00	Zilog Inc.	7.63	0.00	0.00
Peripherals and Subsystems					Up 0.02%	
OTC	10.00	2.88	Archive Corp.	7.63	0.00	0.00
OTC	86.75	13.50	Banctec Inc. (H)	88.50	0.25	0.95
OTC	23.50	8.63	Cambex Corp.	12.63	0.63	5.21
ASE	12.25	4.91	Cognitronics Corp.	11.80	0.13	1.10
NYS	23.88	12.50	Conner Peripherals*	50.38	-3.25	-6.47
ASE	19.88	4.41	Dataram Corp.	6.25	-0.88	-12.28
NYS	20.50	6.88	EMC Corp.	20.50	2.75	15.49
OTC	8.38	4.75	Emulex Corp.	5.88	0.13	2.17
OTC	23.00	14.25	Evans & Sutherland	18.13	-0.13	-0.77
OTC	40.63	21.00	Exabyte	24.50	0.25	1.03
OTC	27.75	15.75	Intelligent Info. Systems	17.75	2.25	3.82
OTC	11.25	4.75	Iomega Corp.	8.25	0.00	0.00
OTC	31.75	10.25	IPL Systems Inc.	12.50	-0.50	-3.85
OTC	24.50	10.75	Komag Inc.	15.75	-2.63	-14.29
OTC	15.25	3.88	Maxtor Corp.* (H)	14.63	0.75	5.41
OTC	12.63	2.75	Micropolis Corp.	10.25	0.63	6.48
NYS	103.63	66.38	3M Co. (H)	101.25	1.88	1.89
OTC	7.00	3.50	Printronix Inc.	5.00	-0.63	-11.11
NYS	88.75	7.00	QMS Inc.	6.38	-1.00	-10.87
OTC	16.00	9.38	Quantum Corp.	15.00	-0.50	-3.23
OTC	12.75	3.75	Radius Inc. (L)	4.75	0.00	0.00
NYS	12.88	6.88	Recognition Equipment	11.25	0.13	1.12
OTC	13.13	9.38	Reserch Inc.	11.25	0.13	1.11
OTC	17.63	7.28	Seagate Technology*	14.75	-0.25	-1.67
NYS	78.00	66.75	Storage Technology*	29.25	-1.75	-5.65
NYS	28.63	16.00	Tektronix Inc.	21.38	0.88	4.27
NYS	82.25	67.50	Xerox Corp.	79.63	1.38	2.44
Services					Up 2.67%	
OTC	19.38	11.88	American Mgmt. Systems*	16.75	-0.38	-1.86
NYS	5.38	2.88	Answerp Inc.	3.12	-0.13	-3.85
OTC	18.00	12.50	Analysts Int'l	18.00	0.25	1.41
NYS	69.00	32.50	Auto Data Processing*	47.13	0.25	0.53
OTC	24.13	12.50	Comdisco Inc.*	16.25	0.00	0.00
OTC	13.50	7.75	Computer Horizons	9.25	0.25	2.78
NYS	84.88	57.00	Computer Sciences*	65.75	2.88	4.58
NYS	10.12	7.00	Computer Task Group	8.00	0.50	6.67
OTC	40.50	18.00	CompUSA Inc.	30.00	2.25	8.67
OTC	19.25	8.00	Corporate Software	8.50	2.00	88.57
OTC	30.75	9.25	Egghead Discount Software	9.25	-0.75	-7.50
NYS	33.00	23.88	General Motors E (EDS)*	29.50	-0.88	-1.28
OTC	30.38	8.25	Intelligent Electronics	10.63	0.00	0.00
OTC	14.88	4.00	Mentel	8.13	-1.50	-10.86
OTC	15.75	7.00	Microage Inc.	9.75	-0.38	-3.70
OTC	31.50	17.88	Psychex (H)	31.50	4.25	15.60
NYS	78.50	61.75	Policy Management Sys. (H)	74.00	-0.50	-0.67
NYS	44.63	24.00	Reynolds and Reynolds	44.63	2.50	5.93
OTC	32.00	21.25	SEI Corp	25.25	0.75	3.06
OTC	24.38	10.88	Shared Medical Systems	22.00	1.75	8.64
OTC	29.00	13.50	Sungard Data Systems (H)	29.00	0.50	1.75
NYS	3.63	1.13	Ultimate Corp.	1.63	0.13	8.33

KEY: (H) = New annual high (L) = New annual low
* Companies tracked in Computerworld Stock Index

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IN BRIEF

Amdahl loss likely

■ **Amdahl Corp.** last week said a decline in demand for its new 5995M mainframe is likely to cause an operating loss of between 10 cents and 20 cents a share in its fiscal third quarter, which ends Sept. 25. Revenue is expected to fall below second-quarter levels of $692.9 million, the Sunnyvale, Calif., company said. The depressed global economy was blamed for the company's woes.

■ Looking to expand its services globally, **Lotus Development Corp.** last week acquired three consultancies. The three acquired firms are: **SOMA, Inc.** in Toronto; **PAVOSOFT** in Paderborn, Germany; and **RE/AIMS** in Dallas. All three will operate as part of Lotus Consulting Services. Terms of the acquisitions were not disclosed.

■ **SAP AG**, the parent company of **SAP America, Inc.**, posted profits of $35 million for the first half of the year ended June 30, an increase of 24% from the same period a year earlier. Revenue for the period was up almost 26% to $273 million. SAP's North American operations were cited as a significant contributor to the upbeat results.

Short takes

Proteon, Inc. and **Symantec Corp.** warned analysts that their quarterly results would be below expectations.... **Encore Computer Corp.** completed a two-phase, $150 million financial restructuring with **Gould, Inc.** and its parent company, **Nippon Mining Co.**... **Proactive Software, Inc.**, a developer of customer service applications, has received $4 million in second-round venture capital financing.... **Intel Corp.** last week announced the first cash dividend in the company's history, a 10 cents per share payout to be distributed on Dec. 1 to shareholders of record as of Nov. 1.

DG makes waves in RAID storage market

Forms new unit dedicated to supplying RAID subsystems for Unix machines from IBM, Sun, HP

BY KIM S. NASH
CW STAFF

NEW YORK — Data General Corp. last week upped the stakes of its hardware-centric survival gambit by forming a new division dedicated to making and selling RAID storage subsystems for other vendors' Unix machines.

At a briefing here, DG Chief Executive Officer Ron Skates outlined plans to storm a virtually untouched market: storage products based on redundant arrays of inexpensive disks (RAID) technology for Unix lines from IBM, Sun Microsystems, Inc. and Hewlett-Packard Co., among others. Skates said the product line, called Clariion, is "a tremendous opportunity" for the Westboro, Mass.-based company. Tom West, senior vice president, will head up the Clariion division.

The subsystems will be sold through value-added resellers, OEMs and distributors, the company said.

The Clariion unit is a smart way to plug a gap between declining MV minicomputer revenue and slowing sales of DG's Unix-based Aviion line of workstations and servers, analysts said. For the most recent quarter, DG reported an $11.7 million loss, compared with $35.6 million in profits last year. Sales dipped from $301 million to $259 million.

Although he declined to reveal sales projections for Clariion, Skates pointed out that more than $22 billion is up for grabs in the storage market, according to Montgomery Securities. When IBM recently rolled out a RAID subsystem for its Application System/400, executives suggested that RAID for the RISC System/6000 is not far behind.

However, Skates said that with DG's head start, "we are confident we can go against anyone who comes along."

"DG is ahead of [RAID] competitors [in the Unix market] by several months. That's a sizable step," agreed Stephen Widen, program director at WorkGroup Technologies, Inc., a consulting firm in Hampton, N.H. Widen said he expects first-year sales of Clariion to range between $150 million and $200 million.

DG's hardware bent stands in contrast to the strategies of other former high rollers in the proprietary minicomputer market, such as Wang Laboratories, Inc. Wang bet on a software/service makeover as its ticket out of the financial basement.

But DG stuck with systems, unveiling its Unix-based Aviion line four years ago. DG has since delved into the storage market with RAID products for Aviion and the proprietary MV line, HADA II and HADA, respectively. However, Clariion is targeted strictly at non-DG machines. Skates explained that the company will essentially become a third-party supplier of RAID for RS/6000 and HP 9000 Series 800 lines, among others.

Storage overkill?

Clariion begs the question of why anyone needs 24G bytes of storage under his desk. Most Unix business applications do not require it, explained Steve Despain, information systems programmer at Celtic Life Insurance Co. in Chicago.

RAID intrigues Despain, but he said, "The application I have on the RS/6000 just doesn't need it because it's not that a big deal if the application goes down." However, the company is seriously considering RAID for an E series AS/400 it plans to buy before the end of the year.

"We're looking at RAID there because we'll be running mission-critical apps," which could include imaging. Despain explained. Indeed, relatively inexpensive deskside RAID could kick-start data-intensive technologies such as imaging and voice recognition, Widen added.

Trumpeting storage

Data General's foray into the third-party RAID market consists of the following:

Clariion disk array

Capacity: Up to 24G bytes.

Prices: $28,000 for entry 2.5G-byte/stripe system; $20,000 for add-ons. $46,000 for entry 6G-byte/stripe system; $34,000 for add-ons.

Availability: November for RS/6000, SPARCstation versions. By early 1993 for HP, Unisys Corp., ICL PLC versons.

Clariion tape backup array

Capacity: Up to 20G bytes.

Price: $30,000.

Availability: By early 1993.

Borland/Symantec war over 'secrets' heats up

BY CHRISTOPHER LINDQUIST
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. last week claimed that a former Borland employee other than ex-Vice President Gene Wang had transferred confidential information to Symantec Corp., Wang's new place of employ.

Borland released a statement attributed to human resources manager Kim Begley, alleging that Lynn Georganes, Wang's administrative assistant, had twice requested and been granted permission to return to Borland to retrieve "personal items" and files from the Borland computer system.

According to the statement, Georganes copied several files to floppy disks and appeared to delete "numerous" files. After her second access to the system, Georganes was stopped by Scotts Valley police, and the contents of the disks were reviewed, according to the statement.

Begley said she was then informed that the disks contained "Borland confidential information." Georganes could not be reached for comment.

The statement is the latest chapter in the Borland vs. Symantec saga that began two weeks ago when Borland accused Wang of stealing Borland confidential information for Symantec to use [CW, Sept. 7].

Frenzied pursuit

Since that time, Borland has engaged in a faxing frenzy, sending search warrants, court orders and Begley's statement to the press.

Symantec, however, has been relatively silent, sending out nothing more than short, one-page responses to Borland's allegations.

Symantec's only reply came in a statement that said Begley's declaration contained "obvious errors" and was merely "hearsay." The statement did not indicate whether the disks had indeed contained confidential Borland information.

A second hearing Sept. 29 will explore whether Symantec violated a previous temporary restraining order.

PC price dive takes toll; Everex announces layoffs

FREMONT, Calif. — Everex Systems, Inc. further tightened its belt last week, announcing layoffs that analysts said were yet another sign that the personal computer price war is taking its toll.

The company said it would reduce its work force by about 12%, or 250 people worldwide. The layoffs follow closely on the heels of a similar pruning in August and bring the total head count at Everex to about 1,850.

Steve Hui, chief executive officer at Everex, attributed the action to the brutal price wars currently roaring through the PC industry. He said the company would try to sidestep them as much as possible by concentrating on such higher margin areas as networked, fault-tolerant computers. Everex's newly formed Advanced Systems Division was established to further this aim, he said.

The recent low-end PC lines introduced by Apple Computer, Inc. and IBM Personal Computer Co. have further eroded the niche that Everex had successfully mined in the past, said Richard Zwetchkenbaum, an analyst at International Data Corp. "Everex used to push better performance at a lower price," he said. "Now, it's hard for vendors to fly in that atmosphere because the air is getting awfully thin."

CAROL HILDEBRAND

TRENDS

HIGH PERFORMANCE WORKSTATIONS

U.S. manufacturing sites, which have had a long history of CAD/CAM use, are showing a slight increase in use of commercial applications.

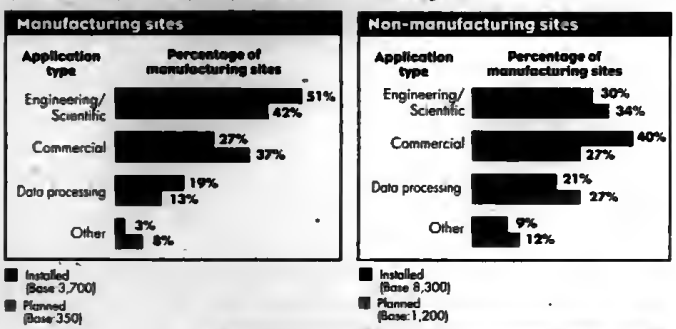
INDUSTRY DISTRIBUTION

The Top 5 industries heavily using high-performance workstations include.



USAGE

About one-fifth of the workstations at both types of sites are used for data processing, which includes application development, computer operations and information management.



TOP 4 APPLICATIONS

Manufacturing	Non-manufacturing
1. CAD/CAM	1. CAD/CAM
2. Engineering	2. Software development
3. Manufacturing	3. Accounts receivable
4. Software development	4. Integrated accounting

Source: Computer Intelligence, La Jolla, Calif.

CW Chart: Stephanie Faucher

NEXT WEEK

Business applications programmers just can't take the PC seriously as a development platform. That's because PCs lack the tools, methodologies and support facilities that make sense for team-oriented developers in large companies. In Depth reveals what developers are pining for so they can take advantage of the easy-to-use PC.



James Yang

The straight line may still be the shortest distance between two points — but it isn't the only path to IS leadership. Witness, for instance, El Segundo, Calif.-based defense and technology player Hughes Aircraft, where some of the leading lights of IS, including Chief Information Officer Jim Wensley, come from non-IS backgrounds. See Manager's Journal.

INSIDE LINES

Universal management

▶ Satisfying its hunger for mainframe-class systems management tools for commercial Unix, Sun is expected today to announce a major deal with Computer Associates. Sources close to the duo confirmed that CA will port its CA-Unicenter suite of integrated systems management applications to the Sun Solaris platform. Deliveries are expected within a year, sources said.

Just leave it under the mat

▶ A bug in CA's License Management Program — the software that prevents CA products from being run on unlicensed mainframes — could prevent some users from turning on the latest release of CA-7 automated scheduling software. Users upgrading to Release 3.0 who are on a CPU license arrangement need a software code or "key" to activate the program. But they don't know that unless they read the documentation. License Management has been a sore point for some CA customers, and hoping to head off the problem, the vendor recently sent a letter to CA-7 users offering the key at no charge over the phone. CA said most of its users have site licenses and won't need a key, but one user said he doesn't want to expose his company's business operations to practices he can't control. Until CA comes up with a different solution, he said he doesn't plan on upgrading to Release 3.0.

Slippery when wet

▶ Mike Maples, Microsoft's executive vice president of worldwide products group, said the company's timetable for a general release of its New Technology (NT) is two to three weeks behind schedule. Maples left the door open for other slips, adding that Microsoft is reviewing feedback from the 14,000 beta-test copies of NT in developers' hands before setting the final ship date. But he was quick to add, "There's no reason to believe it won't ship by around the first of the year."

Chipping away

▶ IBM, Apple and Motorola are reportedly months ahead of schedule in producing the first big fruits of their alliance and could have a working sample of their new microprocessor, the Model 601, out within weeks. The three companies originally thought they could not produce a prototype chip until early next year, but the new development could speed up the entire schedule.

Loaded for Compaq

▶ Oct. 6 will likely see the debut of an IBM 486-based color notebook, priced at or below a competitive Compaq product, said one source who has been briefed. Also on the agenda are docking stations for the notebooks. As for the ValuePoint line, IBM isn't talking much, but one source says the machines don't look like anything IBM has put out before. Pricing is expected to be competitive with the clones.

Pink Tide rises at DEC

▶ Layoff and resignation figures for the past quarter at DEC will be released after Sept. 30, with numbers expected to total at least 5,000, according to inside sources. This is double the highest number of departing employees for any previous quarter but only 25% of the total amount of people expected to be axed by the end of 1992, the sources said.

Unix Expo's International Award for Excellence in Open Systems will be a tie this year, sources tell us, with Kmart and Australia's Department of Planning and Housing in Victoria each declared a winner in implementing open systems. Kmart reckons it has saved more than $150 million with its Unix-based Strategic Store Environment, and the Australian agency counts staff savings in excess of $2.1 million a year. Nine companies entered the contest, including Salomon Brothers in New York, the public prosecutor's office in Sydney, Australia, and the Burlington Coat Factory in Lebanon, N.H. The winners take home a glass sculpture from Tiffany's. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

Informix Database Technology Helps Corn Products Keep Cash Flowing.



When Corn Products, a unit of CPC International Inc., needed to move mission-critical accounting functions off the mainframe, they turned to Concepts Dynamic, Inc.—an Informix VAR—and Informix, the experts in UNIX relational technology.

Millions of Dollars in Annual Receivables.

Corn Products, whose corn sweeteners and starches are used in everything from soft drinks to pharmaceuticals, needed to process an enormous amount of cash receivables. They needed a system that would track cash through multiple lock boxes and automatically reconcile financial transactions to multiple receivable ledgers.

Corn Products chose the CDI/Informix UNIX solution.

Replacing Mainframe Collections Software.

Corn Products chose Concepts Dynamic's Credit Management System to achieve complicated receivables processing goals. By using CDI, Corn Products' customer invoices are fed into receivables with full data validation, audit trails, and financial control. And CDI replaces mainframe collections software with a cost-effective, flexible UNIX solution.

Corn Products and thousands of other companies have called on Informix and Informix VARs to successfully handle their critical data.

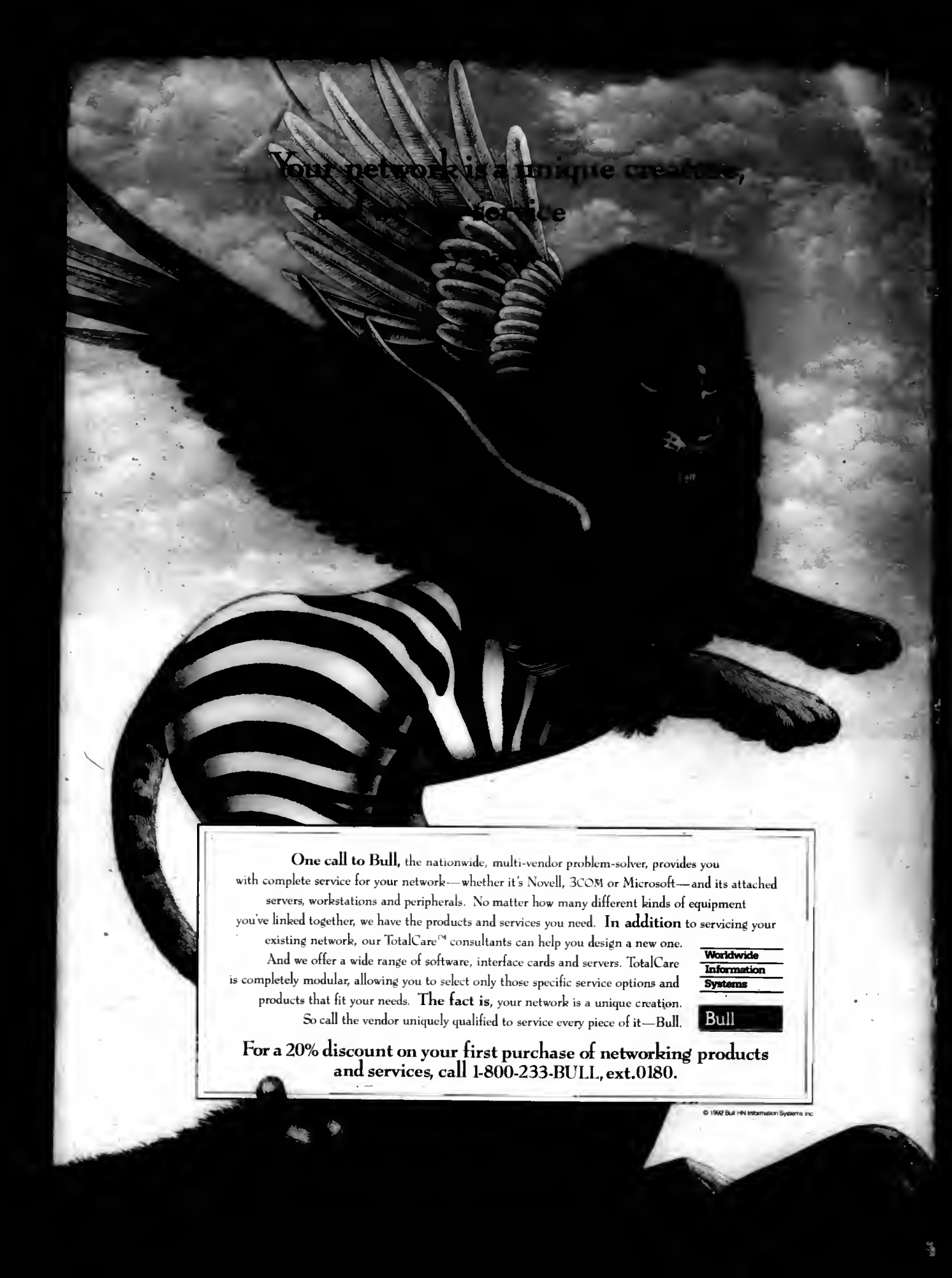
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